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CONTENTS:

Editorials (For Titles See Extended Table of Contents) 397

ORIGINAL ARTICLES

Group Hospitalization. *Charles B. Reed, M. D., Chicago* 413

Chest Roentgenography, Standards and Techniques. *D. O. N. Lindberg, M. D., Decatur, Ill.*..... 415

Plastic Surgery of the Orbit. *M. L. Folk, M. D., Chicago* 410

Pelvic Endometritis *W. A. Malcolm, M. D., Peoria, Ill.* 424

Postpartum Hemorrhage in Outpatient Obstetrics. *Henry Buxbaum, M. D.,* and *I. C. Udesky, M. D., Chicago* 428

Neuroblastoma re Roentgenologist. *E. L. Rypins, M. D., Bloomington, Ill.*..... 431

Roentgen Therapy of Cellulitis. *B. C. Cushway, M. D.,* and *R. J. Maier, M. D., Chicago*..... 436

Intrapelvic Protrusion of the Acetabulum or Otto Pelvis. *Lawrence M. Hilt, M. D., Springfield, Ill.* 443

Elliott Machine in Treatment of Prostatitis. *Leander W. Riba, M. D., Chicago*..... 444

Use of Obturator re Chronic Antrum Infections. *G. C. Otrich, M. D., Belleville, Ill.*..... 449

Syphilis a Problem in Prenatal Care. *Carolyn N. Macdonald, M. D., Chicago*..... 452

Radiologist and the Hospital. *W. M. Hartman, M. D., Macomb, Ill.*..... 458

Occupational Therapy in Mental Hospitals. *B. Lemchen, M. D., Chicago*..... 461

(Continued on page 8)

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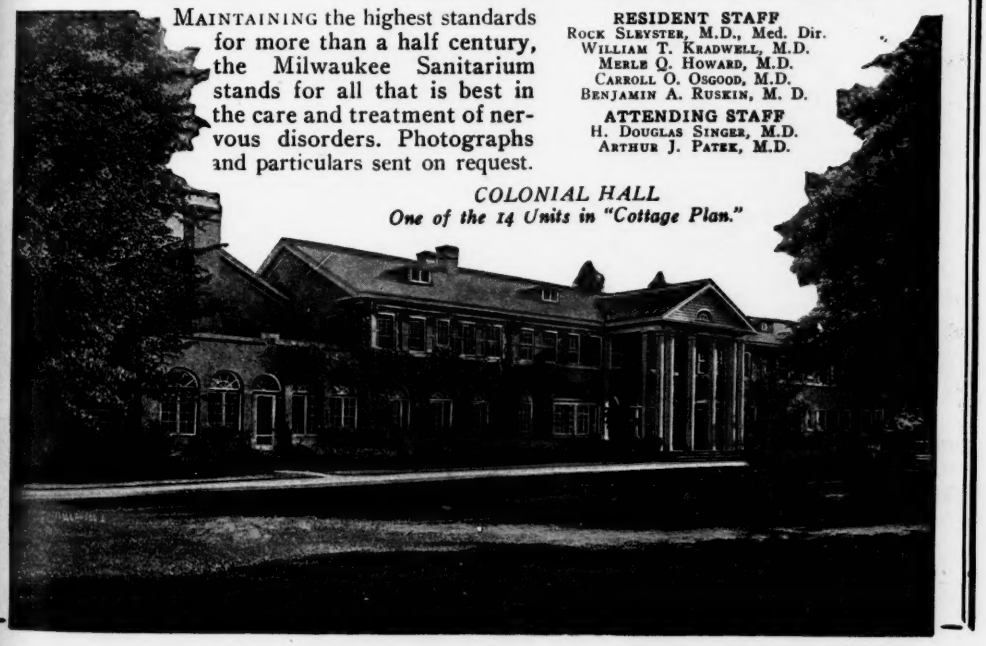

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Editorials

STATE MEDICINE AND SLAVERY—BRITAIN'S MODERN BURDEN

A brilliantly compiled factual review of what has happened to medical patients and medical practice in Great Britain under the present system of state medicine was published on October 11 in The Chicago *Sunday Tribune*, under the signature of John S. Steele a London correspondent for that Newspaper. The article bore this heading

"STATE MEDICINE AND SLAVERY — BRITAIN'S MODERN BURDEN"

PHYSICIANS OVERWORKED AND NATIONAL HEALTH DECLINE PANEL SYSTEM GIVES RISE TO ABUSES"

Now, Mr. Steele is not a scientific expert. He is a layman with an inquiring mind, an appraising eye and that keen newspaper training coupled with experience that enables him to analyze a situation, to sift the wheat from the chaff, and to sumarize logically and accurately all its elements as well as to point out the natural conclusions. He gives the United States a truthful report, straight from the heart, of state medicine and its functioning.

Lloyd-George, chiefly responsible for foisting state medicine upon the British nation, got his idea from the system "made in Germany" by Bismarck, the "blood-and-iron" chancellor. Elsewhere we have commented upon the results of State medicine to Germany. By permission of The *Chicago Tribune*.

"Twenty-five years ago Lloyd George, then chancellor of the exchequer under Asquith's premiership, and not yet 'the man who won the war,' startled Great Britain and frightened its possessing classes by his great campaign for 'social reform.' He was regarded as a dangerous demagog, and there is no doubt at all that the series of measures which he introduced in 1911 and succeeding years started Britain on the road to socialism, on which it has traveled so far since then.

"Chief among these measures was health in-

surance, which the chancellor introduced to the people in a raging, tearing campaign in which he promised the British workingmen 'ninepence for fourpence.' The British workingman took the bait and the system was inaugurated which for good or ill has been part of British policy since then and probably will continue to be in one form or another.

"The system of state medicine inaugurated then with such a flourish and with so much enthusiasm today *has few defenders even among its so-called beneficiaries.* It has—and this is not only my own opinion but the publicly stated opinion on many occasions of doctors, coroners, hospital officials, and others who are engaged in working the system—reduced the practice of medicine from a profession to a trade, made slaves of doctors and chemists, and has bred in the people a dangerous reliance on hurried and inefficient doctoring which has caused a serious decline in the national health average.

"But before going into the weaknesses of the system it is necessary to explain what it is. Under the original health insurance act, which has been amended and modified several times in detail but not changed in essentials, every employed person in Britain earning less than a certain amount yearly is compelled to become insured against sickness. He or she is supplied with a health insurance book in which a stamp must be stuck every week. The employer is responsible for sticking in the stamps, which are obtained at the postoffice and which cost 9 pence weekly in the case of men and 8½ pence in the case of women, or about 18 and 17 cents. The employer is then entitled to deduct from the current week's wages 4½ pence, or 9 cents, in the case of men and 4 pence in the case of women. In practice this deduction is seldom made in the case of domestic servants or others where there are only one or two employes, but in large establishments, of course, it is a substantial item and the deductions are made automatically.

"The stamp feature gave rise to many amusing incidents in the early days of insurance. Dowager duchesses and other 'old ladies' of both sexes and similar opinions wrote to the newspapers swearing they would never 'lick stamps for Lloyd George,' and some of them actually risked fine and imprisonment for refusing. There was even a movement to organize a non-stamp-lickers' league, but it never got beyond the newspaper correspondence stage. The 'ninepence for fourpence' slogan, of course, referred to the fact that the working man or woman paid only 4 pence and got 9 pence in benefit, the other 5 pence, or 10 cents, being paid by the employer. The state also makes a small contribution to augment the insurance fund.

And then again

"The benefits to which the insured persons are entitled are free medical attention when ill, either at home or at the doctor's office, or surgery, as it is called in Britain; maternity benefit, free drugs, and various minor benefits.

"Medical treatment is provided by what is known as a panel of doctors and chemists, hence the name 'panel system' by which the arrangement is known. Any qualified doctor is entitled to have his name on the panel in his district, and every insured person is entitled to choose his panel doctor.

"If, as is usually the case, the insured person has no choice, he is assigned by the administrative authorities to a doctor, care being taken to divide the available patients as fairly as possible among the doctors. Chemists, or druggists, are chosen in the same way, and the panel doctor is not allowed to dispense drugs, as he was in the habit of doing before the panel system. If the patient is dissatisfied he can change his panel doctor for another by giving a month's notice."

The doctor if disliked has comparatively small chance to defend himself. Note further that

"There is elaborate machinery for inspection, investigation of complaints against doctors, and an intricate administration system which is said to be far too costly for the service it renders. Doctors, in fact, complain that most of the evils with which the inspectors are constantly dealing are inherent in the system itself and would disappear if greater freedom were given to the doctors. For this service the doctor receives a capitation grant per patient of 9 shillings—roughly about $2.25—a year. About 5 cents of this is deducted for administrative costs, but $2.25 per patient a year is near enough the doctor's remuneration. The chemist, or druggist, as he would be called in America, receives about 3 shillings, or 75 cents, per patient a year, for which he must supply all ordinary drugs prescribed by the doctor. A special allowance is made for specially expensive drugs."

In further detail Mr. Steele writes:

"This brings us now to the working of the system and its weaknesses. *A sum of $2.25 a year for unlimited medical service seems farcical, and it would be if every patient called on the doctor for his services.* It must be remembered, however, that this is insurance and that the doctor's panel includes healthy as well as sick. In actual practice he never sees the majority of members of his panel, but he gets his 9 shillings a year for sick and well just the same. It is also fair to say that the same doctor before the insurance scheme never would have seen many of the poorer of his panel patients at all. When they were overtaken by illness these people either went to the out-patient departments of the charitable hospitals, to the poor law infirmaries, or to the sixpenny doctor, who then flourished in the slums and who was generally either a philanthropist or a quack and who if he were dependent on his practice for his living could not give even the attention which panel patients now receive from their overworked insurance doctors."

Especial attention should be paid to this paragraph, in view of the fact that it comes from a *layman*—that it is a *patient's* point of view.

"*Overwork for the doctors is the great evil of the system and is what has reduced medicine from a profession to a trade. In spite of the fact that practically every general practitioner in Britain outside the wealthy areas in some of the large cities belongs to the panel, there are not enough doctors to go around.*

"Excluding men and women in the army, navy, and air force medical services, but including all specialists, all those holding permanent hospital, insurance, or other appointments, and those who have retired but still keep their names on the register, there are just over 40,000 doctors registered in Britain.

"Fifteen thousand of these are 'on the panel,' which means that 15,000 doctors in general practice do not neglect to have their names registered under the insurance act and do not scorn to collect the 9 shillings per head per year."

Mr. Steele proceeding further with his indictment comments that

"There are 15,000,100 insured persons, so that the average panel is about 1,000 patients per doctor. This means an average income for the doctors of about $2,250, which is not so bad a starter for a young doctor in a busy neighborhood, particularly when it is remembered that this has nothing to do with his regular practice at regular fees among those whose incomes are above the insurance level.

"Remember also that this is an average. There are hundreds of country doctors with only a handful or a few dozen panel patients, and this, of course, raises the average in the towns. The town average is estimated at between 2,500 and 3,000 patients, and there have been cases mentioned in the coroners' courts and elsewhere of doctors with panels of between 4,000 and 5,000 patients.

"It is officially estimated that a doctor with a panel of 2,000 patients must have about 8,000 attendances at his surgery and must make 1,000 home visits every year. This works out at twenty-two surgery visits a day and between three and four home visits. Again this is an average for healthy and unhealthy neighborhoods. In many towns the number of attendances will be twice as many per thousand as in others, and there are panel doctors who see as many as forty or fifty patients a day at the surgery and call on a couple of dozen at their homes. Of course, the answer is that it can't be done, or rather that 'seeing' means just what it says and cannot include proper examination and diagnosis.

"It is usual for the British doctor to have from one to two regular surgery hours every evening, generally between 7 and 9 p. m. He usually also is to be found at home for an hour in the morning, but as a rule sees only more or less urgent cases or patients by appointment then. The rest of the day is devoted to visiting, hospital work, etc. How, then, can a man, even in the full two hours, attend properly to even twenty patients, or, still worse, forty? Twenty to the hour means three minutes each, and some obviously must have more time than others. Add to that the fact that the British workingman dearly loves a 'bottle' and doesn't think the doctor has done his duty unless he gets one."

And so as Mr. Steele remarks—

"This necessitates spending a minute or two in writing a prescription, and even the most commercial doctor must give a bit of advice as well as a bit of paper. The result, of course, is

that panel practice has degenerated into a quick look for the more obvious symptoms. If a patient is obviously seriously ill he is usually recommended to go to a hospital and given a note to secure admission. This, of course, is the best thing for him, but for every case of acute illness detected thus many are missed in their early stages when preventive measures might have saved the patient much suffering and the state some money.

"Almost daily the system is attacked by coroners and by eminent medical authorities. A coroner in Britain, it must be remembered, is not an unqualified politician. He must be either a doctor or a lawyer, and he has a full-time, well paid job. One of the most constant critics is Dr. Edwin Smith, one of the senior coroners for London and an eminent medico-legal authority.

"In a recent case in Hoxton, a poor district of London, a man who had been visited at his home by his panel doctor and told to come around to the surgery next day, according to Dr. Smith, was rushed to a hospital a few hours later and was dying when admitted. 'Generally speaking the home treatment of panel patients is very inadequate.' Dr. Smith declares. In a recent report E. H. Worth and Dr. S. G. Askey, joint secretaries of the National Medical union, says 'It [the panel practice] puts a premium on hurried and imperfect work. It destroys the proper personal relationship between doctor and patient and lowers the standard of medical work.'"

Even the law sides with the layman and the doctor on this subject.

And now on still another tack.

"So much for the patient," says Mr. Steele, "In spite of the fact that the insurance system has made it possible for the young doctor to earn a living quickly, the doctors are complaining, chiefly of too much supervision. They are limited in their prescribing to certain drugs and are not allowed to use modern and expensive medicines. If they do so they are liable to be summoned before the administrative board for their district and fined or reprimanded. Doctors have had as much as £250 withheld from their remuneration for extravagant prescribing.

In cases of alleged carelessness they are also liable to arraignment before the committees and to fine or reprimand or even to being struck off the panel. While some control may be necessary in such a service, the general medical opinion is that it has reduced the panel doctor from the status of an independent professional man to that of a servant of the state who must do not what he considers best for his patient but what the state will allow him to do.

"The late Lord Riddell, who was chairman of one of London's largest hospitals and a good friend of the medical profession, shortly before his death described the panel doctors as 'MEDICAL SLAVES WHO MUST PRESCRIBE ACCORDING TO CERTAIN RULES OR BE FINED,' AND IN THE SAME SPEECH HE DECLARED THAT BUT FOR THE VOLUNTARY HOSPITALS THE PANEL SYSTEM WOULD HAVE BROKEN DOWN LONG AGO."

As still another layman's argument against the system of state medicine that is worse than quackery, Mr. Steele continues

"One curious effect on medical practice has been the evolution of the doctor who is nothing more than an employe of a loan shark. Purchase and sale of practices is the ordinary rule in Britain. When a doctor wants to retire or move to another neighborhood he sells his practice to a successor, usually for about two or three years' income. When a young doctor wants to start in practice he usually has to buy an established practice. A panel practice with a thousand patients is an asset on which money can be borrowed. A tribe of loan sharks has grown up who finance young doctors in the purchase of panel practices, taking from them an undertaking to turn over all or the greater part of the income until the loan is paid, and at the same time making them sign an undated bill of sale for the practice. The loan shark can turn the doctor out and resell the practice at any time that the debtor falls into arrears.

"Perhaps one of the worst results of the panel system is the destruction of that personal friendship and mutual confidence which should exist between the patient and his family doctor. The patient feels that the doctor is his servant, paid anyhow and is liable to demand treatment for trivialities which in the old days would have been cared for at home. The doctor feels that his panel patient is exploiting him and causing him to neglect his private paying patients, who get

him when he is tired and worried by an overwhelming panel practice.

"Many patients of the better class who nevertheless come within the panel system resent being herded in a cold and often dirty waiting room with repulsive companions while waiting to see the doctor, who is turning them off at the rate of one every two or three minutes. The moral effect on the doctor is bad also, and overwork seems to have led to an increase of drink and drug taking among doctors. It is impossible, of course, to get any figures on this, but there is a steady flow of complaints to the insurance committees against drunken or drug-addict doctors. They are always sternly dealt with."

Does the United States want *that* sort of medical disbursement?

The answer would seem to be in the negative.

THE FEDERAL SOCIAL SECURITY PROGRAM PROVIDES PROGRESSIVE ALL-DEVOURING FEDERAL TAXATION

The Federal Social Security Program might aptly be called the "wolf at the door" that has eaten up the family!

It may be *Federal* but to the Man up a Tree it is *fatal* and "Funderburgian."

There are so many words, so many phrases, so many promises and clauses and whereases in the Federal Security Program that the public, in a fashion, has let the whole thing go by default. Choked into a coma by the very ponderosity of the plan, by its effluvia of vocabulary, the public has swallowed the thing whole, as the easiest way out of the difficulty.

Hark back to a quick and casual revue of the Federal Social Security Program as it grins at us across the breakfast table.

It was conceived, according to the records, in June, 1934. On August 14, 1935, it became an actuality through a congressional act and began to operate through ten different manifestations of life and activity, focusing through two major parts.

Of these one is an administrative unit, and the other, a group of operative or "line" bureaus.

In the administrative unit is found the (a) offices of the general counsel; (b) bureaus of research and statistics accounts, and audits; public improvements and informational service.

In the operative or "line" bureau are found (a) Bureau of Old Age Benefits; (b) Bureau of Public Assistance comprising: 1. state grants to needy aged; 2. state grants to dependent children; 3. state grants to the blind.

Financing for the immediate needs of these *"federalities"* is achieved by Congressional appropriations, included:

(a) For the fiscal year, ending June 30, 1936, the expenditure of the sum of $42,500,000 *of taxes from the citizenry* of the highly overtaxed United States.

(b) The sum of $475,253,410 available July 1, 1936, and secured from the mass pocket of the United States citizenry.

For the Social Security Program must see that there is money provided to finance both *federal* and *federal-state* activities.

The federal activities are what their name implies. The federal-state activities are as their name, too, implies, a "co-operation of federal and state appropriation" activities—which when certain requirements have been fulfilled, mean *federal grants or allocations to various states.*

Under this scheme the two major drains upon the taxpayers of the United States will be the unemployment compensation and the old age benefit system, both *branded with the trademark of "Federal."*

Under the "Federal Unemployment Compensation" there devolves upon all employers who hire eight or more than eight persons, a separate and progressive federal tax. For example, in 1936 this tax is figured on a basis of one (1) per cent. In 1937, the rate of the levy will be two (2) per cent, and in 1937, three (3) per cent, and so on in progressive mathematical ratio. As an estimated income for this fund, 1937 is expected to produce $177,000,000, while in 1938 the estimated yield is set at $530,000,000.

Under the other part of the plan, or the "Federal Old Age Benefit System," there will be granted a pension or retirement system to persons 65 years or over and not engaged in "gainful employment." While this gives the average citizen five years longer than did the "Osler plan" it is certainly evolved without any reference to the pension system for war veterans relicts and kinsmen which is a definite leak in the federal treasury. It is purposed to start these payments in January, 1942. Funds for these

payments are being collected in federal taxes from both the employed and the employer. Starting at one (1%) per cent. in 1937, rising to two (2%) in 1938 and during and subsequently from 1939 at three (3%), the estimated income for 1938 (?) is $568,400,000. Estimate appraises that in forty years, the federal old age benefit fund will have to its credit no less *than fifty billions of dollars.* In this program *neither domestics nor farm laborers are included.*

The federal state allocations drop still another Ethiopian in the national wood-pile. For the present fiscal year the $187,000,000 allocated to the Social Security Bureau will be disbursed through three main avenues. These are (a) federal grants to states, to help the blind, of $8,000,000; (b) federal grants to states to aid dependent children, of $35,000,000; (c) federal grants for assistance to the needy aged of $85,000,000.

In many instances federal grants to states must be met dollar for dollar from state funds, and that, while the federal moneys must be handled by a state board, almost without exception, supposedly to aid in the distribution of the funds, there is required a *"lay advisory committee."*

The United States Treasury Department has set aside a total of $8,000,000 for allocations to states in aid of public health work, as well as an additional $1,320,000 for public health research.

In such allocations or allotments, the respective states must meet dollar for dollar exactly fifty-seven and one-half per cent. (57½%) of the federal appropriation. Also dollar for dollar, must be matched by the states another 22.5% (twenty-two and one-half per cent.) for aid in special health problems. The remaining twenty (20%) can be granted to states as "in the judgment of 'Public Health Service' may be deemed best," it not being necessary to match dollar for dollar in funds for this last twenty (20%) per cent.

For the present fiscal year there has been allocated to the Children's Bureau of the United States Department of Labor $6,469,000, which is to be subdivided in its disbursements as follows:

(a) Aid to crippled children, $2,150,000.

(b) Child welfare services, $1,200,000.

(c) Maternal and child-health services, $2,820,000.

Allotments for maternal and child health services and for aid to crippled children must be met dollar for dollar by the states but the allocations for child welfare work need not be matched.

Even so the burden laid upon the *states,* and *par consequence,* the *taxpayer* through the *doubled state and federal taxation* by the "Federal Social Security Program" would seem to be a perfect example of the attempt of a bewildered man to "lift himself up by the bootstraps."

DOCTORS MUST KEEP UP AN AGGRESSIVE ATTITUDE IN THE MATTER OF COMPULSORY HEALTH INSURANCE

Starting as far back as 1916, Illinois Doctors led a campaign of education against Compulsory Health Insurance. The campaign was active over a period of years and culminating in 1920 in a resolution at the New Orleans meeting of the American Medical Association condemning outright the idea of compulsory health insurance in America.

Today certain foundations and welfare workers and medical politicians are again advocating Compulsory Health Insurance. Recently William Trufant Foster, a well known economist, before the Academy of Political Science and the College of Physicians of Philadelphia, stated that it is folly to burden physicians any longer with business affairs which they have notoriously mismanaged and for which they are not trained, in which they are not interested and which interfere with single hearted devotion to patients, which implies that medicine should be taken over by the state.

There is a preponderance of evidence that powerful forces and agencies are again working towards development of Health Insurance in the United States. There is also substantial evidence that foundations, philanthropists and politicians are proceeding at an alarming rate that leads to the socialization of medicine. In a few months measures looking in that direction will be presented before state legislatures. Powerful forces are behind these measures. All that the doctors will have to do to insure their success will be to do nothing. When the physician wakes up to find that he is only a hired man, sent here

and there by some civilian official, it will be too late.

We suggest that the officials of State Medical Societies as well as the individual physician assume a more aggressive attitude in the matter of compulsory health insurance in order to avert a repetition in the United States of the disastrous consequences that attended the adoption of health insurance in other countries.

FORGING AN ENDLESS CHAIN TO KEEP MEDICINE IN BONDAGE

The insurance code demands constant expansion of medical service, while the management at the same time fights adequate medical compensation. The doctor is over busy. He has no time to renovate his ideas by consulting the monthly records of medical progress.

The personal relation of patient and physician is destroyed and a purely cash connection retained with the organization. Commercialism is rampant and professional control of the medical problem eliminated. Insurance service is always second class since the better practitioners will not apply. In only six of the nineteen countries having National insurance were the doctors satisfied with the service.

Every conscientious physician sees in state medicine a vicious forging of an endless chain to keep medicine in bondage, stifle medical progress and to enslave the physician so that his faculties for research atrophy and die.

ENDOCRINES AND THE SKIN

Every cell of the body is influenced by the internal secretions. Since the skin, which should not be regarded merely as a covering to the body, is an important organ coordinating with other organs, it is evident that the relation of the endocrines to the dermatoses must be one of importance. The skin reacts to the endocrines directly, through the blood stream, or indirectly, by way of the nervous system. Many cases of cutaneous disease have been influenced by organotherapy; yet great caution must be exercised in approaching the conclusion that a definite cutaneous condition is produced by a disorder of the endocrine glands. However, application of our present-day knowledge resulting from actual clinical observation, combined with accepted scientific facts, warrants the acceptance of certain procedures and conclusions.

The skin changes that occur with dysfunctions of the internal secretory glands, manifest themselves in texture, color, pigmentation, hair growth and the formation of growths.—Dr. Oscar L. Levin, in *M. J. & Rec.*, Dec., 1933.

THE FREI TEST FOR LYMPHOGRANULOMA INGUINALE: EXPERIENCES WITH ANTIGENS MADE FROM MOUSE BRAIN

Maurice J. Strauss and Marion E. Howard, New Haven, Conn. (*Journal A. M. A.*, Feb. 15, 1936), state that their experiments show that, irrespective of whether the mouse had been infected with lymphogranuloma inguinale or not, an antigen made from the brain of a mouse may induce a reaction similar to the Frei reaction when injected intradermally. In this series of experiments nearly half the reactions to mouse brain antigens injected intradermally into normal subjects were of such a nature as to make them indistinguishable from what is recognized as a positive Frei test, and some of the reactions were of such size and character as to make them easily mistakable for positive Frei reactions. False reactions may result from freshly prepared mouse brain antigen but in their experience are to be watched for when using material that has been stored a month or more. The indications are also that preparation of the antigens with saline solution instead of broth does not influence the reaction. It would seem, from one experiment, that if the antigen is preserved in the dried state the appearance of the false reaction may be prevented for a period of one montb, although the results of another experiment make it seem that, in some antigens at least, the change may take place even in the dried state by the end of two months. The regularity with which tested Frei antigens made from human material were negative is conclusive proof that the normal subjects did not have inguinal lymphogranuloma; and even if the total number (thirteen) of subjects was small the fact that definite reactions to antigens made from the brains of normal mice occurred in all of them, and reactions indistinguishable from positive Frei tests in many instances justifies the conclusion that sensitivity to mouse brain is common enough to lead to a large number of false positive reactions if mouse brain antigens are used for the diagnosis of inguinal lymphogranuloma.

HOW DOES SICKNESS INSURANCE AFFECT DIAGNOSIS

Since insurance administration is controlled by cash considerations, quantity, rather than quality, of medical service is stressed. The essentials of a good diagnosis are time, patience, careful attention to details and sympathetic relations between a skilled practitioner and a cooperating patient. Insurance compels haste and tends to create antagonism between patient and physician. By removal of the essentials mentioned, insurance delivers little more than the dregs of a real diagnosis. The effort to substitute for these essentials something that will fit the cash standards of insurance causes exaggerated importance to be given to mathematical and mechanical analyses, pictures and measurements. But these are only one set of valuable, but often isolated, facts that must be integrated with the personal interview, history and individual examination through the knowledge and experience of the physician. Insurance tends to restrict this most vital part of the diagnosis.—*Sickness Insurance Catechism.*

MEDICAL ECONOMICS

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Edited by the Committee on Medical Economics
of the
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Kankakee, Illinois
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C. S. Skaggs, M. D.

Now that the presidential election is past, we can return to the discussion of some of our other outstanding problems in medical economic matters. There are so many problems in which study is needed that there is almost unlimited work to be done.

The question of Group Hospitalization is far from settled and we hope in the near future to have a report from a member of this committee on the progress of the movement over the United States and the degree of success attending the plan. It is still a controversial subject and there are ethical objections to both the plan and the way the same is being conducted. In Chicago, the special committee, appointed by the Chicago Medical Society, is far from satisfied with the plan proposed for Chicago and I am informed that an article on this question will be a part of this issue of the ILLINOIS MEDICAL JOURNAL. This is written by a Past President of the Illinois State Medical Society, Dr. Charles B. Reed, and should be read by every person in the medical profession who is interested at all in the subject of Group Hospitalization and all of us should be interested for there is interest in the subject on the part of the laity in all parts of the state. For a physician to give an opinion on the feasibility of the plan for his city or community, he must know how the plan is operated and the success attending it in other places. As mentioned above this subject will be kept before you from time to time, by this committee.

Dr. Floyd S. Winslow, President of the Medical Society of New York, has written a most interesting article on the subject "Why Am I a Doctor?" This was read at a meeting of the eighth District Branch of the Medical Society of the State of New York at Buffalo, October 15, 1936. I am asking the Editor, Dr. Whalen, to print the same in this issue of the JOURNAL either in this column or any other convenient part, so that this talk may be available to every member of the medical profession in the state of Illinois. It is a most inspiring article, well written and concise. It will be of great value to the medical profession and may stimulate some of the "Let George Do It" men to assume a little more interest and responsibility in the work of organized medicine and its attempts to carry the message of the medical profession to the laity. Only when a united medical profession assumes the task of enlightening the laity on the problems of the profession will the laity understand the difficulties under which the medical profession is working toward its goal of a healthier country and better medical service to all.

Early in November the Committee on Medical Economics hope to have another meeting to discuss further the economic problems of the profession as well as the progress we have made in the past two months in the study of the same. We hope to have something definite to report to you after that meeting, for each member of the Committee was assigned a special subject for investigation and report. We hope to have with us at that time the officers of the newly formed Association of Members of the Attending Staffs of the State Hospitals of Illinois. They will undoubtedly have some interesting suggestions to make in regard to the manner in which the medical work of the state institutions is carried on and should be able to convince us that lay control of medical men does not result in the best of medical service.

Dr. Harold Camp, Secretary of the Illinois State Medical Society has prepared an article on the subject, "The Educational Side of Medicine" and the same will follow immediately in this column. We hope you will read both this article and the one by Dr. Winslow referred to above. If these men take time to write articles, surely the rest of us have time to read them and think over what we can do to help in the work.

E. S. HAMILTON, M.D.,
Chairman.

THE EDUCATIONAL SIDE OF MEDICINE

Thirteen years ago, at the annual meeting of the Illinois State Medical Society, the House of Delegates unanimously voted to establish an Educational Committee to give various types of service to both the component medical societies and various lay organizations requesting aid.

Owing to the fact that no appropriation of money was made for the work, it was decided that the membership would be asked to make donations according to their individual desires to start the work, and the Council was authorized to name the committee to make the necessary plans for the operation of the Educational Service.

From these actions taken in 1923, the Educational Committee of the Illinois State Medical Society with its many present day activities was developed. Hundreds of speakers have been listed to make talks before various lay groups, and thousands of these talks have been presented. In addition to this type of service, hundreds of professional speakers have appeared before many county medical societies, diagnostic clinics have been conducted under direct supervision of county societies, clinical teams from our Class A Medical Schools and from many large hospitals have presented interesting programs for societies, hundreds of newspapers have received regular supplies of material for health columns, an average of five hundred radio health talks have been made each year, and all of these various services have been presented through the Educational Committee.

Even today, some prominent members of the medical profession do not believe it is advisable for physicians to talk on various phases of health and right-living before lay groups, because many of them believe the efforts of the individual presenting these talks are not thoroughly appreciated.

Today more than ever before, many organizations such as the Parent-Teachers' Association, the dinner clubs, Federation of Woman's Clubs, and many others, believe it is advisable to have presented at fairly regular intervals, talks on health. The medical profession in Illinois and elsewhere, through their many endeavors, has made many new friends and allies through this type of work.

Every physician has a store of knowledge which will be of value to his lay friends, and he should use every opportunity made available for the presentation of same when requested to do so. The history of medicine in the United States, beginning with our Colonial days, when the more successful physicians were either educated in Europe or had been able to take additional work across the ocean, the development of medical progress, medical education and hospitals, the many developments in every branch of medicine and surgery were all made abroad, until today we find that the large majority of these advances have been made in the United States. This growth of Medical Science is interesting to the average American citizen.

When we relate how medical progress in foreign countries burdened with some form of Governmental supervision of medical practice has been retarded, while continual progress has been made in this country, we can convince the most skeptical that we do not need any basic change in our form of providing medical care in the United States.

We know today that many people go to a Chiropodist for information, and perhaps treatment for painful feet, and some members of this profession, believing that their anatomical limits are between the tips of the toes and the knee, frequently treat varicose ulcers and even inject varicose veins. Most people do not realize, however, that many times painful feet result from some systemic disease, and their hope for relief lies entirely on their going to the physician who will give them a complete physical examination in an effort to find an underlying cause for the symptoms.

In most instances it is perhaps no more ridiculous for people to go to someone outside of the medical profession for the relief of painful feet than it would be for them to go to the milliner for relief from a headache.

Backache, as we all know, is a symptom of many diseases, as well as the result of continual strains, or perhaps some injury, yet many women believe that all they need for relief of their troubles is to go to a corset fitter and receive some form of brace, when in reality, they need to seek medical advice for the relief of the cause of this symptom.

We know that many other common symptoms are due to some systemic ailment which physi-

cians only are able to determine, and in our health talks many times these facts may be brought out before lay audiences.

The medical profession, having been charged with the responsibility of caring for the health of nations for centuries, naturally should be expected to give people without medical education, the necessary information to permit them to enjoy the best of health possible under existing circumstances and conditions.

Many of the proponents of schemes for the socialization of medicine and regimentation of physicians have too often stated that the medical profession jealously guards all health secrets and refuses to tell people more about healthful living. The truth is that most physicians today are anxious to do their bit in an attempt to help solve the ever increasing community problems. Many of these are of interest to the physician from a community health standpoint, while all of them are of interest to us as taxpayers.

Health education, in our opinion, is equally important with that type of education which develops as a result of the efforts of our many types of educational institutions, and all physicians today are trained to act as educators, and should not hesitate to give all possible information along health lines to the laity whenever requested to do so.

By doing our bit in this way, we are going to make more friends for the medical profession, and we should be able to thoroughly appreciate this fact when we need assistance in solving many of the more important modern medical economics problems.

HAROLD M. CAMP, M. D.,
Monmouth, Illinois.

October 20, 1936.

WHY AM I A DOCTOR?

FLOYD S. WINSLOW, M.D.,
President, Medical Society of the State of New York.
NEW YORK, N. Y.

Why am I a doctor? Did you ever ask yourself this question? Perhaps it will not be amiss, once in a while, if we examine this basic question. It will be good for us to indulge in what might be called a "periodic self-examination."

Certainly we are not doctors because of the money that is in it. Generally speaking, our companions of early years who selected business pursuits have outstripped us in gathering together the collection of objects which represents monetary success. Why did we go into medicine? Why do we stay in medicine? Why do we live for, fight for, and sometimes die for medicine?

Glory? Where is the romance in our pursuit, for those who follow it? It is said that every ship is a romantic object but the one we are sailing in, and it may also be said that medicine has romance for those who do not practice it. We work in the quiet of the sick room, or the hospital, we walk daily with troubled humanity. Our satisfaction can only derive from the knowledge that we have performed our obligation to heal the sick, in this way paying the debt we owe for the accumulated knowledge and experience of the ages which has been made available to us.

Perhaps this feeling of responsibility is an ideal which we do not always reach, but is it any less our ideal? We can say, without fear of contradiction, that the great majority of doctors are imbued with the purpose to discharge this obligation. And I think the time has come when the public should know, should be definitely told, that the most important thing it should inquire about, when selecting a doctor, is whether he is genuinely interested in his calling, loves his profession, and is not only intent to attain ability as a physician, but feels a responsibility to advance the capacities of the medical profession as a whole. This is, as you know, the main object of medical societies. The man who has such a goal as this in mind as a destiny, is a man who can be fully trusted with the lives of men and women and children.

I will go even further than this and say that I think I stand here facing a group of men who have stood the test of this criterion. In other words, this test of character. You have joined your county medical society. You consider that when you were given the right to practice medicine, you assumed an obligation to do your part to see that medicine, as a profession, preserved its integrity. Now gentlemen, the only way integrity can be attained or retained, is to work for it. When you join your local medical society you work for the integrity of yourself and the group. You render yourself open to the criticism of your peers. You say, in effect, "I intend to behave myself, to put the interest of my patient

Talk delivered at meeting of the Eighth District Branch of the Medical Society of the State of New York at Buffalo, October 15, 1936.

above my own, to observe all the other provisions of the oath of Hippocrates, in letter and in spirit. And not only do I intend to do this, but by joining the county medical society *I have to do it*—I lay myself open to penalties if I do not."

I think the public should be told that a doctor who is a member of his county medical society is a better doctor on this account. I think a patient should ask his doctor, if he is not a member of the medical society, why he is not a member. It is possible, of course, that a physician may be of the highest rank, and not be a member, there is nothing compulsory about it, but as I go over in my mind the names of the physicians who I find have lived so that their excellence is beyond possible question, I do not think I can name one who is not a member of his county medical society.

Now if our loyalty to our profession is merely another form of loyalty to society—to mankind—a point comes up which I wish now to mention. The world today is facing deep and important problems. Confusion abides in the minds of men. Quacks are abroad plying their trade in the realm of economics and sociology as well as in that of medicine. Large groups of people are assuming to know that which they do not know. They are contemptuous of the experience of the the past, and of the experience of individuals, they decry special skills, they substitute rhetoric for reason. So we have another obligation, just as basic as the medical obligation, and that is a social obligation. We must reach out and interest ourselves in these questions which are quite outside medicine, but which need a generous skepticism to counteract what often seems to be a pathological optimism. We have not repaid our debt to society when we merely heal the sick. In some respects, the well need healing, too. That is to say, if we are not to have all our values, all our superiorities broken down. "One man," Mr. Dooley said, "is not only as good as another, but a damned sight better." There are no experts left. There are only simplifiers. And what are we doing about it?

This is not a matter of partisan party lines: the same kind of thinking is to be found everywhere. The public is coming to believe that it is capable of exercising its opinion, its judgment, on difficult technical problems, with no knowledge, no experience. Further than this, it expresses that opinion in response to a catch-word. It does not even make the effort to think a problem through on a rational basis, using the information, however inadequate, which it has in its possession. These are symptoms of grave danger. Sooner than we think, we may see the complete triumph of mediocrity. And there is only one way in which we can make effectual remonstrance, and that is at the polls on election day. Yet I am told by those who have made inquiry that the proportion of doctors who vote is only one in three. Need I say that this is a disgraceful record? Need I urge you to consider its significance deeply, when so many public policies are formulating which may advance or retard the healing art? You know what various candidates stand for, and in general, if not specifically, what type of legislation may be expected of them. Your knowledge, your judgment, is ineffectual unless you vote.

After you have asked yourself why you are a doctor, ask yourself another question, a larger question. Are you a citizen, in fact rather than in name, if you fail to exercise the obligations of a citizen in exchange for its advantages? If we work in our own societies to preserve the integrity of Medicine but fail in the larger society of American affairs to preserve the integrity of our civilization, efforts on the one part may easily be frustrated by inaction on the other.

2 East 103 Street.

Correspondence

HEALTH SECURITY

To the Editor:

This article is a reply to an article on Health Security by Thomas Parran, Jr., M. D., F. A. P. & S., Albany, New York, published in the August issue of the *Medical Woman's Journal*, Cincinnati, Ohio.

Your article on Health Security in the *Medical Woman's Journal*, August issue, was very fine and worthy in as far as it went, but to me, the one and most important factor in health was overlooked and has been by all health officers, social workers, and officials appropriating money to carry on health programs.

This great factor is "Syphilis" and yet rarely do you hear those who advocate preventative medicine, also advocating a public health program of defense and education against "Syphilis."

Is tuberculosis, typhoid fever, diphtheria, scarlet fever and all other communicable diseases, any more deadly in the effect and after results upon the individual than is syphilis?

Can we point with pride, the accomplishment, in wiping out, so to speak, the other less deadly communicable diseases and overlook the one, the results of which cause insanity, locomotor ataxia, general paresis, epilepsy and all the other physical defects handed down until the third and fourth generation?

Can we point with pride upon the results of immunization against a few communicable diseases and yet have an annual report of the enormousness of the venereal disease problem?

Can we point with pride the accomplishment and lose sight of the fact that (4) per thousand individuals in the United States have a fresh syphilitic infection and (8) per thousand an acute gonorrhea annually, and that more than a 1,000,000 people in the United States seek medical aid for syphilis and 1,500,000 for gonorrhea and this number disseminates perhaps five times, before being brought under medical control?

Has public health really accomplished what it is boasting of or has it failed in its purpose, in really reaching the vital problems of health today, namely, alcoholism, prostitution, venereal disease and drug addiction?

Has it escaped the minds of those in charge of public health that 148,000 potential mothers of this country have active syphilis and that many innocent children may be born handicapped by an inheritance, the results of which will remain through life, be transmitted and through no fault of their own and because of which, they may become a criminal, a moron, develop insanity or any other of the serious results of this disease

Has it escaped the eyes and ears of those in charge of our health problems, that as a treatment problem, syphilis ranks first among the contagious diseases of man?

Has it escaped the minds of those in charge of health programs, that syphilis and gonorrhea are communicable diseases, quarantineable, and should be placarded for one month?

Has it escaped the minds of those in charge of health programs that with the rapid increase that is occurring due to alcoholism, prostitution and drug addiction, and along with this, neglect in seeking medical aid, the time will come, when every one will be in danger of acquiring a deadly communicable disease, not from the standpoint of fatality, but the results that follow through life?

Has it escaped the minds of our health workers, the economic loss, the cost to the taxpayers of maintaining institutions for the care of these people?

Has it escaped the minds of our health workers, these same infected people, along with mental defectives, those on relief (perhaps through no fault of their own) and again because a certain class have "never" worked and never will, but "multiply," these are the progenitors of our race today?

To my way of thinking, the Social Security Act in providing the large sum of money to carry on a health program, is inadequate, in not specifying, the money should be used in the prevention of two of the greatest factors a health program ever encountered: first, and most important, the elimination of "syphilis" by quarantine and public education, the same as for tuberculosis and all other communicable diseases, through lecture, placards in public places, in schools and colleges, Parent Teacher Associations, Women's Clubs and in every public gathering, on the screen and over the radio.

The second, sterilization and by this I mean "National"—of the physically unfit, including syphilitics, mental defectives, criminals; or an adequate "National" legalized birth control method, by which reproduction in this class, is reduced to the minimum. Until this is accomplished, and with a reduction in alcoholism, prostitution and drug addiction, our race in the years to come will have degenerated to a low level.

Public health should be taken out of politics, out of the hands of the social workers, and given back into the hands of legitimate medicine, to supervise, control and improve.

Nothing can be perfect with the greatest controlling factor overlooked.

Venereal disease must be eliminated; the spread is unbelievable, the economic loss fabulous, the results to health, statistics, public institutions and medical reports will reveal.

Can public health overlook this fact and claim results?

You answer.

N. GENEVIEVE CHIPMAN, M. D.

Savannah, Illinois.
Oct. 1, 1936.

BENZEDRINE SULPHATE

To the Editor:

Benzedrine has come into prominence lately. Many investigations and original articles are appearing in the press from time to time. The drug has not yet been given a proper setting as a therapeutic agent.

I am therefore offering you a brief synopsis of a series of investigations made by the writer on this drug. The investigations are not positive in their results, but this article will probably prevent some other investigators from covering the same field.

ACTION OF BENZEDRINE SULPHATE IN PATIENTS WITH DEMENTIA PRAECOX. A REPORT OF TEN CASES.

The search for the cause of dementia praecox has led investigators into many fields. Some have sought for the cause in the anatomic structure of various organs; some have attempted an explanation in the dysfunction of the various organs, while others have sought a psychogenic explanation.

Kraepelin suggested it was based on a disorder of metabolism; Mott believed it could best be explained by a disorder of the endocrines; Lewis proposed an aplasia of the circulatory system; Kreitz pointed out that it occurred in individuals of a dysplastic physical type; Cotton emphasized its occurrence in people possessing an area of focal sepsis. Finkelman holds that it occurs in persons with a physiological disturbance in the hypothalamus; Adolph Meyer believes that it is essentially a maladjustment of the individual to his environment.

No theory proposed has been universally accepted. Many physical symptoms of dementia praecox indicate a dysharmony between the two divisions of the vegetative nervous system. Many symptoms point to a hypotonic condition of the vagus group.

The literature on benzedrine sulphate seemed to indicate that this drug is a stimulant to that group of nerves.

In May a group of ten dementia praecox patients was selected and the drug was administered for a period of thirty days. During this period the pulse, respiration, temperature, size of pupils and blood pressure was taken daily. Blood chemistry and basal metabolism rates were taken bi-weekly. The psychologic reactions of the group were taken bi-weekly by the following tests: Sustained attention by counting backward and the Franz tapping test; memory by the Helen Wooley test; association by Woodworth and Wells test and Kimbel's match board tests.

Tests of sustained attention, by counting backward, indicated improvement in three, unimprovement in five and no cooperation in two. Sustained attention (Franz tapping test) was improved in four, no improvement in five and no cooperation in one. Memory (the Helen Wooley test) showed improvement in three, no improvement in two and no cooperation in five. Woodworth and Wells association test demonstrated improvement in one, unimprovement in five and no cooperation in three. Reaction time (Kimbel's match board) was improved in two, unimproved in five; no cooperation in three.

Bi-weekly records of reactions and conduct were made in the form of progress notes. The records indicated no outstanding physiological changes during the course of investigation.

The only facts worthy of note were that the pulse rates were uniformly above normal, while the temperature curves were, except for brief intervals, below normal. Blood chemistry did not materially change in any respect.

The sugar content was within normal limits in all patients. Five showed an increase in blood sugar, while five showed a decrease during the course of experiments.

The series of tests were discontinued at the end of thirty days, because it was found that one of the group had gained four pounds in weight, one had gained one pound, while eight had lost from one to ten pounds during the period of investigation.

From the above it is concluded that benzedrine sulphate failed to stimulate the vagus division of the vegetative nervous system and that whatever existed before its administration persisted at the conclusion of the period of treatment.

C. H. ANDERSON, M. D.,
Elgin State Hospital.

EDUCATIONAL COMMITTEE PROMOTES HEALTH EDUCATIONAL PROGRAM

September and October

SPEAKERS' BUREAU:

48—Doctors were scheduled to address the following lay organizations: Men of the Y.M.C.A. Hotel, Chicago; District meeting Illinois State Nurses Association; County Woman's Auxiliary, Laity Day; Parent Teacher Association District Conference; Health Chairmen, Illinois Federation Women's Clubs; Lions Club, Rotary Club, County Teachers Institute, Parent Teacher Associations, Women's Clubs, County Home Bureau, College Clubs.

21 programs were given downstate and 27 in Chicago.

The Committee is asking all organizations requesting health programs to guarantee audiences of at least fifty adults and if possible to pay the expenses of speakers.

SCIENTIFIC SERVICE:

36—Programs were arranged for county and district medical societies. Counties using this service were Bureau, Union, Coles-Cumberland, Elmhurst Physicians Club, St. Anne's Hospital of Chicago, Sherman Hospital of Elgin, McDonough, Franklin, Randolph, Iroquois, Will-Grundy, DeWitt, Lee, St. Joseph's Hospital of Elgin, 8th Councilor District, Carroll, McHenry, LaSalle, Tri-County Medical Society.

One of the outstanding features of the work of this Committee during the period was the heart clinic arranged for McDonough County Medical Society. Doctors brought in their patients for examination and the clinic proved to be a veritable post-graduate course. Similar programs can be arranged for other county medical societies.

The Educational Committee assisted county medical society secretaries in giving publicity to these scientific programs and also prepared and mailed out invitations to doctors.

Those receiving this assistance were: 245 notices for Fifth Councilor District meeting, 255 notives of Heart Clinic and meeting, McDonough County; 219 notices, Bureau County; 185 notices, Lee County; 308 notices, Randolph County; 149 notices, Franklin County; 600 notices, LaSalle County; 138 notices, Perry County; 673 notices of Tri-County meeting at Kewanee.

RADIO

Forty radio programs were given during the two months over WBBM, WJJD, WAAF. The programs over WGN will be resumed November 10th.

The Committee has tried out a number of new ideas in its recent radio programs. A series of eight talks called "A Doctor's Diary" were given by one doctor and his secretary. This series proved very interesting.

Another program consisted of a round table discussion by three members of the Chicago Ophthalmological Society.

Still a third program consisted of a talk by a doctor on the subject of CANCER, with the radio announcer asking questions at the close of the formal talk.

PRESS SERVICE

959 releases of seasonable health educational articles were sent to newspapers of Illinois.

234 releases were sent to Home Advisers in the state.

384 health articles to Chicago Libraries.

672 health articles to downstate libraries.

The following health releases were written and approved: School Begins, Foot Sore and Weary, Our Leisure Time, Give Them Sight, Initiating Baby Into the Home, Getting Along with Defective Heart, The Education of the Doctor, Growing Superior Children, Dangers in Drugs, Health Check-Up for School Children.

Assistance was given County Medical Societies in establishing contacts, through newspaper publicity, between local medical societies and the public.

72 releases re Fifth Councilor District meeting.
126 releases LaSalle County Medical Society.
67 releases McDonough County Medical Society.
72 releases Clark County Medical Society.
70 releases DeWitt County Medical Society.
38 releases Lee County Medical Society.
44 releases Bureau County Medical Society.
33 releases Winnebago County.
72 releases Tri-County Medical Society.
10 releases Englewood Branch Chicago Medical Society.
10 releases North Shore Branch Chicago Medical Society.

MISCELLANEOUS

The Educational Committee was invited to have an exhibit at the Annual Meeting of the Illinois State Nurses Association at the Palmer House October 29th and 30th. The display showed the program of the Committee and the services available to organizations of the State.

During the month of October the Committee had displayed material pertaining to cancer in one of the show windows of the Marshall Field & Co. Annex Building. Dr. F. L. Rector very kindly had the exhibit put together for the Committee. The purpose of the display was to show the general public that the only three recognized ways of treating cancer at the present time are surgery, x-ray and radium. The window also contained an exhibit of some of the false treatments and drugs being used in this disease.

The exhibit for the month of November will be devoted to information about the feet and their troubles. This material is being prepared by Dr. Walter R. Fischer.

Representatives of the Educational Committee met in conference with the Chicago Board of Education, Chicago Medical Society and Parent Teacher Associations on October 28th.

Requests for information about the work of the Educational Committee have been received from North Carolina, Iowa and Michigan.

Conferences have been held with Health Chairmen of the Illinois Federation of Women's Clubs, Illinois Congress of Parents and Teachers.

Respectfully submitted,

JEAN MCARTHUR, *Secretary.*

WOMAN'S AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY

PUBLIC RELATIONS MESSAGE TO AUXILIARY MEMBERS

The Public Relations Committee this year is attempting to include in their committee every member of the Auxiliary. They are stressing the fact that it will be only when every member is conscious of her value in public contacts that we may hope to accomplish our maximum help to the Medical Society and the public.

This year be on your mark for legislative information and ready to respond in the fight to safeguard the public health.

Within our organization we urge education and discussion of the ways and means for better self education and wiser methods for the dissemination of vital truths to the public, specifically through groups of women and children.

Read Dr. Cramp's articles on nostrums and try and remember the names of these pseudo cures that you may better protect the public.

Here too is the place to make sure every member is aware of the instruction from her local Advisory Committee from the Medical Society.

We urge the reading of both the editorial articles and the Auxiliary messages in the National, State and County journals,—the reading of the *Illinois Health Messenger* for the trend of the health in given localities—thus knowing what point should be stressed in lay education.

Outside the organization meetings—and this is where public contacts mean so much and where the work falls on every member's shoulders alike,—

Build up the habit of periodic health examinations in the minds of your contacts. Thousands of lives can thus be saved. It is well worth while.

Place the *"Illinois Health Messenger"* in school groups and others where its publication of health statistics may lead to inquiries for fuller information on prevention and control.

Encourage the reading of the books about doctors and discuss them where it may encourage others to read them.

Listen to the Health Broadcasts, local, state and national,—(the dramatized versions are again on the air)—turn them on when you have guests and help them form the habit—for the health of the nation.

Join whatever other organizations you can and thus increase your value as a public relations contact.

On your Laity Days each year do your share to see that your guests of the day feel that they too are not only receiving valuable health information, but that here too is a group of friends to whom they may turn for help at all times. Encourage their reading of *Hygeia*, as an authentic source of general information. See that their needs for speakers on health subjects are fulfilled.

If it is agreeable to your Advisory Committee, we are encouraging that attractive parties be given by the Auxiliary as a means of extending our friendship, meanwhile obtaining from the laity, the money with which we afterward entertain them. A social justice, since the work is entirely ours and the benefit theirs.

First and last we say to each member, your special duty is to protect the public health through your contacts with women and children, especially through Women's Clubs, P. T. A.'s library contacts and so forth, and see that pseudo health measures are exposed by furnishing the truth through lecturers.

The enlarged list of books about doctors follows:

BOOKS ABOUT DOCTORS

Rats, Lice and History.....Dr. Hans Zinsser
The Doctor in History.....Haggard
Behind the Doctor.....Clendening
The Doctor Explains.....Major
Medicine: A Voyage of Discovery.....Loebel
Life of Pasteur .....
Arrowsmith .....Lewis
Dr. Serecold .....Helen Ashton
The Magnificent Obsession.....Douglas
My Brother Jonathan.....Frances Brett Young
American Family .....Faith Baldwin
Arches of the Years.....Sutherland
Of Human Bondage.....Somerset Maughan
San Michele .....Munthe
Private Worlds .....Phillis Bottome
Dr. Nye of West Ostable.....Jos. C. Lincoln
Great Doctors of the 19th Century.....
Man the Unknown.....Carrel
100,000,000 Guinea Pigs.....
You Must Relax.....Jacobson
Fads and Quackery in Healing.....Fishbein
Skin Deep .....
Mind That Found Itself.....
Outwitting Our Nerves.....Beers
Dr. Oschner's Book on Socialized Medicine.
Plays:
Men in White.
The Yellow Jacket.

Be sure and get the enlarged list of books about doc-
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tors from your Public Relations Chairman.

MRS. JOHN A. WOLFER,
PUBLIC RELATIONS CHAIRMAN,
Chicago.

WEIGHT REDUCER CAUSES BLINDNESS GOVERNMENT AGAIN WARNS PUBLIC

Dinitrophenol, Sold Under Many Names, Also May Damage Liver, Kidneys, Heart, or Sensory Nerves. It Causes a Blood Disorder, and Even Death

Blindness from the use of dinitrophenol for reducing weight has not stopped the use of the drug in spite of repeated warning, says W. G. Campbell, Chief of the Federal Food and Drug Administration.

The eye cataracts observed in dinitrophenol poisoning develop with a rapidity and malignancy hitherto unknown, and result in total blindness within a comparatively short time. This drug may produce acute poisoning, the symptoms of which are nausea, stomach and intestinal distress, sweating, flushed skin, high fever, rapid breathing, and muscular rigor followed by death. The drug also damages the liver, kidneys, heart and sensory nerves. It produces agranulocytosis, a blood

disorder also noted in cases of poisoning with amidopyrine, a common ingredient of medicines for the relief of pain.

The Food and Drugs Act, according to Mr. Campbell, is practically inoperative against this public health hazard. He says, "The only application of the law to these products is through some misstatement of fact or some false and fraudulent curative claim in the labeling. In any event, the law can be invoked only when the product has been transported across a State line."

"There is little doubt," continues Mr. Campbell, "that the cases of progressive blindness recently reported in California are the result of medication with dinitrophenol. It is to be regretted that the present Federal law is silent with respect to the control of dangerous drugs."

Dinitrophenol is sold under many fanciful names sometimes accompanied by a statement of the presence of the drug itself. Some of the names under which it has been or is now being sold are reported by the Food and Drug Administration as follows: Nitromet, Dinitrolac, Nitra-Phen, Dinitriso, Formula 281, Dinitrose, Nox-Ben-Ol, ReDu, Aldinol Dinitrenal Prescription No. 17, Slim, Dinitrole, Tabolin and Redusols.

"It is interesting to note," said Mr. Campbell, "that all the so-called reducing preparations on the market fall into three categories: first, laxatives that deny the body the benefit of its food intake, as the salts, crystals and herb teas; second, obvious frauds that depend for effect upon the stringent diets prescribed as part of the 'Treatment', as 'Syl-Vette' and 'Stardom's Hollywood Diet'; and third, the unquestionably effective but dangerous articles containing thyroid or dinitrophenol, both of which act by speeding up the utilization of food. All of them are unwarranted impositions upon the public, which cannot evaluate claims made for the preparations, and cannot readily appreciate the harm that may result from careless use of the products.

DISAPPEARANCE OF THE PHYSICAL SIGNS OF RHEUMATIC HEART DISEASE

According to Edward F. Bland, T. Duckett Jones and Paul D. White, Boston (*Journal A. M. A.*, Aug. 22, 1936), it is well known that the signs of valvular disease which appear during rheumatic fever or later usually persist throughout life and often progress during subsequent years. It is less well known, however, that these signs of cardiac involvement may occasionally regress and ultimately disappear. Isolated instances have been observed and commented on by numerous clinicians but accurate data on the incidence and subsequent course of this fortunate group have not been recorded. Coombs has expressed the opinion that in as many as 31 per cent the signs of rheumatic heart disease once present may later disappear. To the authors this figure appears too high and his published data as to both the original condition and the subsesuent observations are inadequate for critical analyisis. A comprehensive study of rheumatic infection and heart disease in progress now for a number of years presented an opportunity to investigate further this occasionally observed but imperfectly understood aspect of the course of rheumatic heart disease in young people. In a series of 1,000 young patients with the physical signs of valvular disease of the heart who were examined at frequent intervals during the first decade after the onset of rheumatic infection, the authors have observed a regression in these physical signs in a considerable number and the total disappearance of all clinical evidence of heart disease in eighty-three instances. In a few, cardiac dilatation during the stage of active rheumatism may have been responsible for the murmurs usually considered characteristic of valvular disease. If this is true, it is the probable explanation for the relatively rapid disappearance of the cardiac murmurs in a small number during the first year. It is the author's belief, however, that the majority of this group of eighty-three patients had injury of the valve cusps (usually the mitral) at the time of rheumatic fever. That it was of minimal degree in each instance seems most likely, so that the residual scarring has produced no significant deformity or characteristic murmurs. It is of interest that although cardiac enlargement (dilatation and possibly pericarditis) was in some cases of extreme degree, it has in each instance subsided. Six borderline cases remain questionable. It is to be noted that the authors have not observed in a single instance in these children the disappearance of either (1) a very loud diastolic murmur ending in a loud crescendic presystolic roll or (2) a loud aortic diastolic murmur and the peripheral circulatory signs of free aortic regurgitation. It will be considerable interest and importance to follow further this group of eighty-three patients (one is now dead) to determine whether in some at least the signs of valvular disease (especially mitral stenosis) may later and insidiously reappear without the recurrence of clinically recognizable rheumatic infection. Although as yet the data are inconclusive, we have evidence from a group of patients with so-called potential rheumatic heart disease which suggests that later mitral stenosis may slowly develop in a few instances.

NAGGING PARENTS

Some parents actually try to scold health into their children. Health, however, is not understandable to children, at least before they reach twelve years, and when we plead with a child to safeguard his health, he may begin to imagine there is something the matter with him; else, he reasons, why should mother or father talk so much about it? A sense of insecurity may develop. Thinking too much about one's body is enough to bring on sickness—mental sickness at any rate—and it is a very difficult condition to cure.

Many of us are victims of the days when child psychology was not so well understood and when nagging was the nearest our parents ever got to constructive discipline. The fears engendered in those early years left an indelible impression that accounts for peculiarities and prejudices which may handicap us for life. Let us avoid passing on this error to the next generation, by remembering that *nagging never pays.—Florida Health Bulletin.*

Original Articles

GROUP HOSPITALIZATION

CHARLES B. REED, M. D.
CHICAGO

The medical profession is again confronted with a new problem in practice. Group Hospitalization is now on the march and since this movement may seriously affect the lives and fortunes of over 10,000 doctors in the State of Illinois it is necessary to examine somewhat into its origin, progress and its adaptability to medical work.

Such investigation is required partly by reason of the deep interest aroused in the various experiments now in operation but even more to define clearly the attitude of Organized Medicine.

Zealous advocates of the idea have created and spread the erroneous impression that medical men are opposed to all plans for Group Hospitalization. The truth is that no serious objections have been made by physicians to properly organized groups which have such medical representation in the management as to assure the exclusion of features hostile to the welfare of the people and to the proper practice of medicine. Indeed the groups which have achieved the most success are those that have this cooperation.

The origin of the venture must be sought in the widely discussed majority report of the Committee on the Cost of Medical Care (1930). From the publicity given to this sophistical document and the advocacy of its ill-considered pretensions by Social Theorists, it was borne in upon commercial promoters that medical service and hospital care might be organized, developed and exploited for profit.

Further examination however revealed that the execution of such plans would bring the incorporators under the control of the Insurance Commissioners of the several states. To avoid this unwelcome supervision the promoters assumed that agreements for medical and hospital attention were nothing more than contracts for service although the methods of organization, the marketing of contracts, the exclusions of benefits, the control and the underlying principle of spreading the financial load, were all borrowed from the insurance field which would obviously demand their classification among the insurance contracts.

That such inclusion was fundamentally correct and that the contracts would be placed either voluntarily or otherwise under the supervision of the State Insurance Commissions is apparent from the answers to Leland's questionnaire. In this summary twenty-one State Commissioners replied that the interpretation was valid and such contracts would automatically fall under the insurance law.

The common principle at the base of these decisions was, in brief, that the groups concerned assumed common risks and shared the loss. In other words Group Hospitalization must be regarded as an embryonic form of Health Insurance.

The only exceptions admitted were those where the contracts were entered into by individual hospitals with open staffs, or by fraternal, benevolent or religious associations which could be operated in reality as "not for profit" and with commercial promoters relegated to obscurity or exclusion. In these cases the agreement is regarded as a contract for service. That the Illinois Legislature passed a permissive act does not alter the intrinsic insurance relationship.

With this questionable foundation the business took root in various places and in various forms wherein legal action was improbable or delayed by uncertainty.

Meanwhile, from the medical standpoint, some Group Hospitalization plans are suspiciously unethical. Where a doctor or layman, group or corporation, contracts to furnish either hospitalization or medical care or both for definite periods of time at an agreed rate, the contractor is either practicing medicine unethically in his own person, or he is not practicing but acting as an intermediary between the real practitioner and his patient. Both are indefensible since for success in either of these procedures a business solicitor, or publicity agent with definite rewards for "acquisitions" of business is a necessity and the process from its inception violates Secs. 2 and 4, Art. 6, of the Code. Such actions either reduce compensation to points lower than adequate service permits, and to unfair competition with other medical men, or it puts medical service under lay control, or corporate management, or both with all the evils of solicitation, sensational publicity and freedom from professional restraint.

Neither, in this case, does the fact that Group

Hospitalization is already in operation here and there diminish nor abrogate its sometime unethical character any more than the existence of the Public Health Institute, a "not for profit" corporation, and similar illegal institutions absolve then from professional disrepute. Moreover such organizations are for the most part superfluous and impose a new complication upon a people and a profession already overburdened with bureaus. Leland believes that by observing the essential safeguards of the insurance laws these organizations would be enabled to provide better for the safety of the insured and better for the preservation of medical reputations which are imperiled by injudicious and precipitant indorsements of unworthy plans.

For the patient the outlook is somewhat more satisfactory than in Health Insurance plans as generally proposed since the bureaus are smaller and more sensitive to financial loss but here also the danger of malingering cannot be eliminated for a man who has paid a certain sum for service or protection is always eager to secure a tangible or an intangible return.

From the standpoint of the hospital the proposition is not undesirable since it promises to fill some empty beds and diminish shortages by the grace of being a preferred creditor with certainty of payment. In this connection caution must be used in the selection of hospitals lest undesirable institutions be endowed with new life or the doctor be exploited by the direction, supervision and marketing of medical service through the hospital authorities as exemplified by the methods in vogue at the Chicago University hospitals.

"The importance of this movement," says Leland, "has been sensationally overstated." Was it through partizanship or promotional reasons? "Out of 144 organizations which were, at one time or another in course of formation, only twenty-three exist today." Leland criticises also the unmethodical management which is commonly present and especially the fact that no records are kept of the experiment whereon actuarial conclusions could be based, as well as the feeble, unbusinesslike attempts at financial statement.

Where they do not fail and disappear, the trend of these enterprises is, inevitably, toward the setting up of a surreptitious insurance business which makes for commercial expansion, competition, increase of commercial influence, merger with legitimate insurance concerns, or finally, to become the nucleus for a wider expansion of Health Insurance or State Medicine. In all these terminations the County Society loses regulative control altogether over ethical and medical standards.

The nature of the contract therefore and the type of administrative control are extremely important to the medical profession. Medical men should vigorously oppose any proposition which destroys the basic features of medical service or permits hospitals, even by indirection, to enter the practice of medicine. (Leland)

In order to meet intelligently the exigencies of the local situation a committee was appointed by the Chicago Medical Society last Spring to study the question. In June a report was presented to the Council which embodied certain principles which the Committee felt might preserve the ethics of practice and the independence of the doctor under the conditions imposed by the experiment.

These principles were fundamental in character and required the proponents of Group Hospitalization to so organize as to—

1. Preclude the possibility of hospitals practicing medicine and from exploiting the services of physicians.
2. Prevent the underbidding of hospitals.
3. Recognize the A. M. A. and A. C. S. standards as the basis for hospital membership with such modifications as the Chicago Medical Society (or the county society) may from time to time officially approve.
4. Exclude no hospital except for reasons set forth in clause three.
5. Refer all matters of medical administration and medical policy to the Chicago Medical Society (or County Society) whose decision in such cases shall be final and binding both on the Group Hospital management and on the member hospitals.
6. Keep such records of admission and assignment of patients as the Medical Society of the County may require and to keep them open for inspection by properly appointed officials of that body.

The Committee believes that these principles should control the relationship between the medical profession and the Hospital Groups.

Furthermore, in every instance where the plan is legitimately organized on a "not for profit,"

and therefore presumably on a wholly altruistic basis, reasonable protection should be assured against diversion of funds to sales agencies, publicity men, or profit seeking corporations. The enterprise should concern itself solely with hospital care to avoid entanglement in contract practice. Logically also, the control should be vested in the people who can render the service, that is, the doctors and the hospitals.

With single hospitals, or small communities, the project may succeed but if wider and more ambitious expansion is undertaken the plan should embrace all approved hospitals, and their staffs should be open to all approved medical men for otherwise a rift would be created and the hospital field opened to competition by rival groups, bidding and underbidding for "acquisitions" or in membership drives which ultimately would bring ruin to the hospitals as well as the competing groups.

The situation is problematical, the experiment unproven as yet and, in spite of the principles laid down, some cases admit so great a possibility of commercial domination that not only the plan but details of its operation, should be most carefully studied before receiving a professional endorsement.

In fact, medical men should refuse official recognition of such insufficiently tested schemes, until all the principles laid down have been complied with and the County Society has so authoritative a voice in the management that it may watch sedulously the development and tendencies of the protean forms which this movement may assume.

CHEST ROENTGENOGRAPHY—NEW STANDARDS AND IMPROVED TECHNIQUES

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The chest roentgenogram is now generally considered to be the most important single factor in the diagnosis of tuberculosis of the bronchopulmonary tract.[1] For the diagnosis of non-tuberculous lesions within the thorax a major diagnostic role must also be assigned to the chest film. This is especially true in bronchopneumonia where the physical signs are usually lacking or inconclusive.[2] Until recent years the use of the chest radiograph has been restricted, more or less, to that of a "laboratory aid" for the corroboration of the presence of lesions of gross character and extent. Thus, the quality of the film was seldom challenged for consideration of possible enhancement of its diagnostic usefulness. Brown[3] has noted that suits have not infrequently been brought on the basis of such films that no interpretation of pathologic conditions should be made of them. (See Figure 1). Weyl and Warren[4] correctly insist that a fairly satisfactory film is not possible with apparatus of less than 90 kvp. and 100 milliamperes, with exposure time slower than 1/10 of a second and distance shorter than 48-50 inches. That a general adoption of a basic standard of technique is necessary needs only the reflective observation that chest radiographs from different laboratories lack comparability. (See Figure 2).

Our present interest in the improved roentgenogram has, to some extent, followed survey studies among large groups of apparently healthy individuals wherein it was repeatedly observed that films of good quality could detect tuberculosis in its earliest manifestations, and, in many instances, months or even years before physical signs and sputum became aids in the diagnosis. McPhedran[5] cites only a single instance in which the lesion was overlooked on first viewing and so emphasizing the potential diagnostic values accruing to the improved quality chest film. The present diagnostic standards, National Tuberculosis Association[6], maintain that definite parenchymal changes are to be seen in nearly all instances of proved tuberculosis whereas absence of such changes demands other proof of the existence of the disease.

Sargent[7] considers that "A radiological examination is an autopsy of the living." It is necessary, however, as Rigler[8] has put it, that "the films should be technically almost perfect." Such films are definable[9] as those in which there is sharpness and comparability of the shadows of bronchovascular markings, visualized with contrast, from apex to base and from hilum (including paracardiac areas) to the lateral chest wall. These requirements are perhaps best satis-

Read before Illinois State Medical Society, Springfield, Illinois, May 20, 1936, Section on Radiology.

fied, with present available equipment, using the following technique:[10]

Calibration (Patient)	18-B
X-ray tube voltage	60.2 kvp.
Focal spot-film distance	1.83 meters
X-ray tube current	300 ma.
Exposure time	1/10 sec.
Milliampere-seconds	30 ma-sec.

For the overnourished individual a proper degree of contrast may be preserved through increase of the tube current factor to 500 milliamperes. The technique given avoids the distortion of shorter target-film distances as well as providing sharpness and reproduceability—results of short exposures made accurate through use of the impulse timer. On the other hand, it is not felt that milliamperages above the 300 to 500 range increase the diagnostic usefulness of the film sufficiently to warrant the expenditure necessary to provide for such increase of capacity. With the reduction in the effective focal spot size, made possible with the advent of the rotating anode type of tube, there should result a definite improvement of detail in films taken with moderately high milliamperage techniques. Condenser-discharge apparatus is manufactured with a single condenser, whereas, sev-

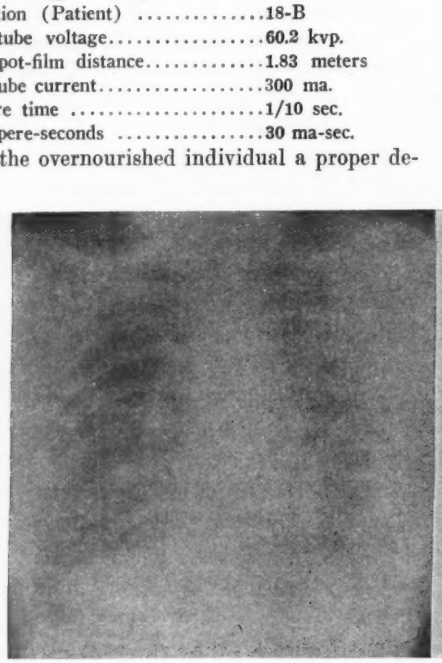

Fig. 1. This film was actually submitted for interpretation, though utterly lacking in detail, density, and constrast.

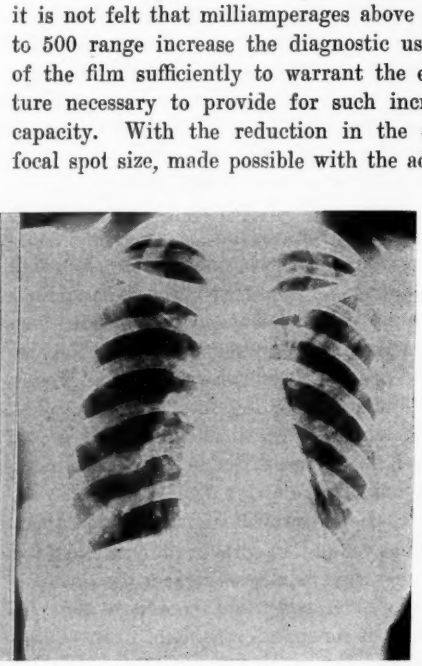

Fig. 2. There are to be found many variations of film quality within the range between this film and that represented by Fig. 1.

Fig. 3. A diagnostic pleurocentesis yielded straw-colored fibrinous exudate. Over-penetration exposure, together with high speed chest Bucky diaphragm, offered a diagnosis of pulmonary abscess, located beneath the fluid density.

eral capacitances are required for optimum chest films.[11]

For the penetration of pleural thickening (See Figure 3) or dense tissue masses such as follow surgical collapse of the chest wall, the use of the High Speed Chest Bucky Diaphragm adds contrast which is usually lacking with ordinary overpenetration techniques.

Several non-technical factors affect the diagnostic usefulness of the chest film. The scapulae, if allowed to remain in normal position, may,

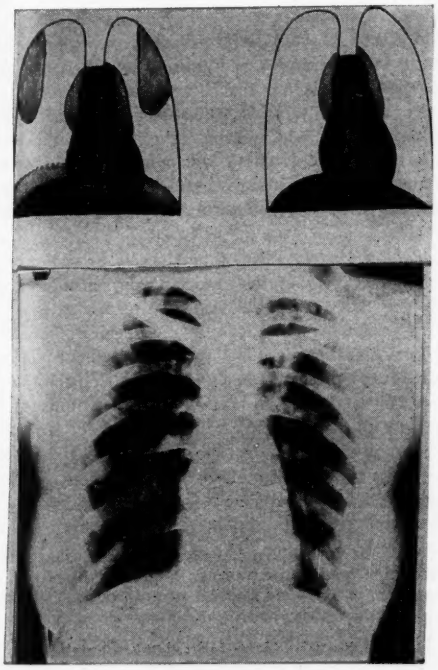

Fig. 4. The diagrams show how much parenchymal tissue may be overshadowed by failure to throw the scapulae out of normal position, and lack of fullest possible inspiration which prevents complete diaphragmatic descent. The scapulae on the film produce veiled densities in the middle and peripheral zones as low as the 6th and 7th posterior ribs.

on the single film, prevent proper visualization of the peripheral zones of the parenchymal fields. Unless the fullest possible inspiration precedes the exposure, the descent of the diaphragm will be incomplete and a considerable area of basal pulmonary tissue will be obscured. Only by rotation[12] of the chest may the paracardiac areas be explored, and occasionally a cavity finds location within the hilum shadow area. (See Figure 4.) The calibration of the patient remains somewhat of an estimation procedure. However, carefully kept calibration records will provide data on which may be based a more accurate estimate of the kilo-voltage requirements. The patient should be measured with a pelvimeter and the maximum chest depth noted in centimeters. Weyl and Warren[13] suggest that chest wall soft tissue characteristics be designated as "A," for the undernourished; "B," average; "C," muscular; and "D," extremely fat and muscular. We have found it of value to further classify chest types as A, AB, B, BC, C, CD, and D. It is unnecessary to point out that unless precision methods are practiced in the darkroom and the best available film secured for processing, all attempts to improve the quality of the chest roentgenogram are rendered almost valueless.

In most cases a single x-ray film is adequate to demonstrate the lesions of advanced tuberculosis. However, the stereogram offers better opportunity for more critical examination of the finer structures to the end that visualization is had of relatively small abnormal densities, characteristic of the earlier forms of tuberculosis.[14]

Serial studies accurately depict such events as the development of bronchogenic spread, new contralateral involvements, etc., and are of importance both diagnostically and from the standpoint of prognosis.[6]

The tendency to overinterpret the chest film exists largely because of the coarsening of the normal bronchovascular markings due to either a broad focal spot or to lack of exposure speed.[8, 15] The proper interpretation of the chest film is, of course, of final importance.[16]

SUMMARY

1. Lesions of gross character and extent may be recognized in the chest roentgenogram of indifferent quality. For a fairly satisfactory film, however, minimum standards of technique and apparatus have been set which, if generally adopted, would allow for some degree of comparability between laboratories.

2. Improved chest films result from a technique involving somewhat higher milliamperages and without any sacrifice of detail if rotating anode type of tube is used.

3. The High Speed Chest Bucky Diaphragm, by adding contrast to the exposure made for the

purpose of penetrating such dense tissues as thickened pleura, etc., may be expected to find more general use, especially in hospitals and sanatoriums.

4. Calibration of the patient, rotation positions, fullest inspiration and avoidance of scapula shadows are factors which influence the diagnostic value of the chest radiograph.

DISCUSSION

Dr. Roswell T. Pettit, Ottawa: I am very much interested in this need for standards in chest radiography. As perhaps most of you know, I was the medical director of the Tuberculosis Sanitorium at Ottawa for a number of years before I took up radiology. With that background of clinical work in tuberculosis, together with radiology—and a large share of my work happens to be radiology of the chest—there has been brought home to me the miserable state of affairs in roentgenology of the chest and the importance of the proper type of films. This matter was of such great importance that the National Tuberculosis Association saw fit to make a grant to the Moore School of Electric Engineering, of the University of Pennsylvania, and the Moore X-ray School Laboratory was founded in 1929 for the purpose of trying to improve the standards of roentgenology. This work was in the hands of Mr. Weyl and Mr. Warren, two electrical engineers who published an article in the April issue of the *American Journal of Roentgenology*.

In a survey of twenty-nine hospitals the amount of density on the films as measured with the densimeter (photo-electric cell) varied as much as 200%. They also found by their study of optics that films that vary more than 10% are not comparable. When you have roentgenologists, as represented by some 29 hospitals, that vary as much as 200% in their ideas of proper density optically, something ought to be done about it.

This Moore School X-ray Laboratory is a research institute endorsed by the National Tuberculosis Association and we should adopt the standards laid down by this school, at least the minimum standards. This does not mean we are going to have to stop our progress but there are certain minimum standards that must be met. In the General Electric Company's catalog is a reproduction of a radiograph of a chest taken in three seconds at thirty-two inches. You can imagine the distortion. You have not a comparable amount of radiation over the surface of that film and yet manufacturers are advocating the taking of such films, and those films are going to have to go into court. Any bright lawyer who knew anything about x-ray technic could have evidence based on radiographs of that sort thrown out as incompetent medical evidence.

I know of one case that involved a suit of $17,000. Radiographs were presented by both sides. One was so pale you could not see anything but the hilus shadows and bronchial tree and the other so black you could not see anything but the ribs and heart and yet films like that were used in settling an important law suit.

In 1922, Freiburg, Graf and Kruppele demonstrated quite clearly that they were able to differentiate between the fibrous or productive type of tuberculosis from the exudative type. On the basis of the roentgenogram they could make a prognosis as to whether a man could get well or not. In a series of cases presented before the Chicago Roentgenological Society I was able to prognosticate successfully in 85% of the cases using their method.

With improved technic, improved methods, I believe there are a number of cases where careful study of the edges of these densities in the roentgenogram will result in improvement of our knowledge. I mean particularly differentiation of the different types of tuberculosis, and differentiating tuberculosis from other changes in the lungs, such as pneumonoconiosis.

Weyl and Warern have published a book on "Apparatus and Technic in Radiography of the Chest." The publisher is C. C. Thomas of Springfield. It covers the results of eight or ten years of intense research in this field and gives the basis for the necessary standards of chest roentgenography. Let me recommend this book to you. We certainly need somebody to tell us what constitutes a proper x-ray film of the chest.

Dr. Van Hazel: I feel this paper is exceedingly important, not only to the clinician who must take care of these patients but also valuable to the patient himself. Certainly if we can pick up earlier lesions in tuberculosis, there is going to be less call for the more radical procedure of chest surgery to control the disease. It has been my privilege to see films several times taken by this technique and I certainly can attest to the value of studying these serially as compared to the patient with tuberculosis who has been more unfortunate having had films taken probably first by one laboratory, later by another. One cannot immediately decide whether surgical procedure is indicated from the roentgenogram in these cases so if this method can be adopted it certainly will be worth while.

I am not qualified to talk about the technical part of the x-ray and the taking of films. As a clinician we are called upon in thoracic surgery to take care of these patients and you can render more service by this type of film. You have developed the roentgenogram of the chest and are responsible for the increasing value of its use. I hope it will go on increasing its value and by these methods it can.

Within the past six weeks, I saw a patient who had an x-ray film following pneumonia which showed a definite localized collection of fluid in the mid-axillary portion of the left side. The patient was extremely ill. On the right side there was also involvement but the roentgenogram did not show this. One or two days later it showed definite involvement. The accumulation of fluid was pus which was aspirated and 50 c.c. of pus removed. The patient went on and got well. He did not get well from aspirating that pus. I feel confident the trouble with that patient was the process in the right side the poor film had not shown. One might have undertaken some radical procedure that

might have changed the outcome. So its value lies not only in tuberculosis but in other diseases as well.

In the thoracoplasty patient sometimes we get atelectasis or certainly a cloudiness of the pleura or some edema which might obscure the lung field on the side operated on. It has been our procedure in these cases to make not only the plain film which shows the parenchyma but also to take an over-exposure picture which will show the degree of collapse by showing the cut end of the ribs which frequently are not shown in the ordinary film. Sometimes it is very revealing to see just what the nature is in these dense areas and it may guide one tremendously to the benefit of the patient.

I believe we as clinicians may be at fault sometimes in not getting as much information out of the chest films as we would desire. I mean by that to sign a slip and say we want an x-ray of the chest is not fair to the roentgenologist. We must cooperate with the roentgenologist, tell what we are looking for and he will have a much better idea in following the proper procedure to obtain that information. Many times I have been rewarded by expressing to the roentgenologist just what we are looking for.

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DO YOU KNOW?

Cancer is more common in women than in men.

Rats begin to breed when only three or four months old.

Ice cream made for diabetic patients is made largely of cream and eggs with saccharine to sweeten it.

NOTES ON PLASTIC SURGERY OF THE ORBIT

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At the last meeting of the American Academy of Ophthalmology and Otolaryngology in Cincinnati, Dr. John M. Wheeler, in one of his lectures, made the significant statement that plastic surgery of the eye belonged to the ophthalmologist who was more familiar with the anatomy and physiology of this region than the general surgeon. The writer came to realize the truth of this axiom early in his ophthalmic career when a number of cases presented themselves to our eye clinic, at the University of Illinois, with deformities about the eye and orbit. In some of these cases excellent plastic work on face and forehead had previously been performed by well known general plastic surgeons, but distortions of the lids and socket had remained, causing considerable dysfunction. We proceeded to correct these defects according to standard technique and the percentage of our successful results grew in proportion to our increased experience and interest in this work. I, therefore, feel that any ophthalmic surgeon of moderate skill can perfect the technique of plastic surgery in his own field, provided he displays a keen interest in it.

Neither time nor space will permit a full discussion of this subject, I shall, therefore, merely endeavor to outline the following fundamental principles, which every beginner in this field must familiarize himself with:

A. *Preoperative Procedures.* 1. The primary factor causing the deformity, be it a burn, injury, epithelioma, lupus, etc., must be completely healed and free from all traces of activity. It is best to get the opinion of a competent dermatologist as to the advisability of attempting plastic work in a given case.

2. All infections must be cleared away before any surgery is attempted, for if the op-

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erative field harbors even the slightest infection the graft will not "take."

3. A thorough physical examination of the patient to determine the presence or absence of constitutional disease or dyscrasia must be made prior to operation.

4. The skin about the eye and face on the side of the operation must be prepared for several days as suggested by Sheehan.[1] This consists of steaming the face with hot towels for one-half hour three times a day, followed by a thorough cleansing with soap and water.

5. Immediately before the operation the skin is again scrubbed with green soap and water, dried with ether, then followed by alcohol and, finally, coated with mercurochrome or neutral acriflavine.

B. *Operative Technique.* 1. After the skin incision, which is made according to the type of the operation, all adhesions and scars must be severed or excised, so as to permit the tissues to fall into their natural positions. Remaining adhesive bands not only tend to perpetuate the deformity but also act as a source for further cicatricial tissue formation.

2. The bed prepared for the reception of a graft must be put on a stretch and so held for some time in order to bring about a minimum amount of post operative contraction. This can be accomplished in two ways. One by the method of Wheeler,[2] which consists of roughening the margins of the upper and lower lids in three corresponding places for a distance of four mm., inserting double-armed silk sutures through the entire thickness of the lids close to the rawed margins, and tying them over beads. The sutures are removed after six to eight days, by which time adhesive bands will have formed in the roughened areas holding the lids closely together. In some cases it is necessary to cause adhesions through the entire length of the lid rims. The lids are held together for six to eight weeks in order to prevent contraction. At the end of that time the adhesions are severed and the raw areas touched up with silver nitrate. The second method consists of placing three or more retention sutures through the lid margin and, after having drawn the lids up to a maximum, fastening them to the face or forehead, as the case may be, by adhesive plaster. Experience has taught us that in cases of large defects the latter method is more satisfactory as we are then better able to apply larger grafts and so allow for a maximum amount of future shrinkage.

3. In a good many cases a certain amount of the exposed area can be covered by undermining and advancing the adjacent healthy skin thus avoiding the necessity for using large grafts from other parts of the body.

4. The exposed raw area is then covered by a full thickness skin graft. The best source for grafting eye lids is obtained from the opposite lid of the same eye or the opposite eye. It is surprising how much skin can be taken away from a normal lid without impairing its function. The next best source is the skin from behind the ear, which resembles the integument of the lid more closely than that of any other part of the body. Lastly, skin can be obtained from the inner surface of the arm or thigh, or from the abdomen. If a lashline is desired, skin may be taken from the pubic region, using the upper border of the pubic hair for the lid margin. Regardless of the source, the skin should be free from subcutaneous tissue and, particularly, from fat.

5. The graft must be handled as little as possible and with the greatest gentleness. Of late we have followed Sheehan's[3] suggestion which consists of placing four anchor sutures, one in each side of the graft, before it is removed. These enable the assistant to fix the skin, apply tension when necessary, and transfer the graft to its new bed without undue delay or unnecessary handling.

6. The graft is either sutured to the adjacent skin or, else, simply placed over the bed and held there by pressure; the former method, however, is most commonly used.

7. After the graft is properly placed, a layer of vaselinized, perforated gutta-percha is placed directly over it. This is covered by wads of cotton or gauze and fastened by adhesive. More loose gauze is placed over this dressing and a tight bandage is applied over the eye and the corresponding side of the face.

8. Considerable pressure must be applied over the graft for the first six to eight days, so that it is in contact with the underlying tissues throughout its extent, thus preventing the

formation of organized connective tissue between graft and underlying bed.

9. When dealing with a shrunken eye socket, the graft is wrapped around a dental compound mold, raw surface outside, inserted into the socket, and the lids sutured over it.

C. *The Postoperative Treatment.* The first dressing is done on the fifth day. The gauze and the gutta-percha are gently removed, the wound cleansed and a dressing similar to the first one applied. Thereafter the wound is dressed every other day, the sutures are removed on the sixth or eighth day and the dressings entirely dispensed with at the end of ten days or two weeks.

The following cases, briefly described, will illustrate the most common conditions encountered in our work, the technique used, and the results obtained.

Case 1. Cicatricial ectropion. M. I., female, aged 40. Marked ectropion of the central portion of the left lower lid following excision of tumor two years previously. The dermatologist was of the opinion that the tumor had been either an epithelioma or a blastomycosis. After freeing the skin from underlying tissues and exciting all scar tissue, the lid was put on a stretch by two silk sutures, fastened to the forehead, and the exposed raw area covered by a free Wolff graft taken from the inner aspect of the left arm. The graft took in toto and an excellent result obtained as shown in Figure 1.

Figure 1. Cicatricial ectropion following removal of tumor.
A. Before operation. (Top)
B. After operation. (Bottom)

Case 2. Cicatricial ectropion due to burns. J. W., aged 6 years, sustained burns of face and forehead by falling against steam pipe at age of 4 months. Numerous plastic operations had been performed by a well-known surgeon of St. Louis, leaving extensive scars on right cheek and forehead and a marked ectropion of the nasal two-thirds of the lower lid and nasal one-half of upper lid. Lid plastics were performed first on the lower lid and one month later on the upper lid using the same technique as described in Case 1, the grafts in both instances obtained from the thigh. The result was fairly good, but the lid closure was still imperfect in nasal one-third. The patient was not seen until five years later when a third plastic was done on the upper lid, resulting in good closure as shown in Figure 2.

Figure 2. Cicatricial ectropion due to burn.
A. Before operation. (Top)
B. After operation—eyes open. (Middle)
C. After operation—eyes closed. (Bottom)

Case 3. Congenital coloboma of right upper lid, keratosis of right cornea, and right anterior polar cataract. C. M., 8 years of age, presented herself with a congenital triangular defect in the center of the right upper lid, the base, one-half inch wide, towards lid margin. Trichiasis was present. A skin grafting operation was performed in a manner similar to the one

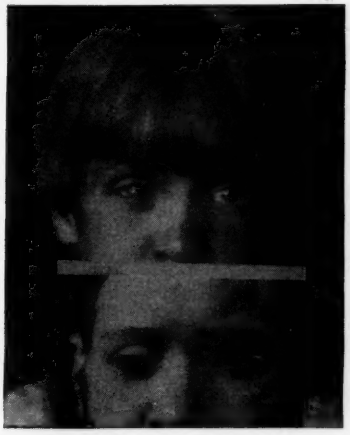

Figure 3. Congenital coloboma of right upper lid.
A. Before operation. (Top)
B. After operation. (Bottom)

described above, leaving only a very small central notch at the lid margin, with good closure, as seen in Figure 3.

Case 4. Congenital pigmented nevus of lids. W. K., female, aged 17 years, presented herself with an unsightly pigmented, mulberry-like nevus, involving both right lids and extending upwards to temporal border of right brow and downwards over cheek, covering a wedge-shaped area, six by four cm. in dimension. The dermatologist who referred her to us, had advised against radium but thought surgery might be of some benefit. She was presented before the Chicago Ophthalmological Society where considerable difference of opinion was expressed as to the advisability of a plastic operation. We felt, however, that surgery would, undoubtedly, improve the young lady's appearance and, accordingly, proceeded to do the work in several stages. In May, 1935, the skin of the entire lower lid and portion of cheek involved was resected and replaced by a full thickness Wolff graft taken from the thigh. The graft took only partly, leaving a few raw areas which we covered by several pieces of Thiersch graft one month later. The lower lid and cheek healed up well leaving only a moderate ectropion at outer canthus. Two months later the skin of the upper lid was resected and replaced by a large graft taken from the lower abdomen and using the public hair-line for a lash-line. This graft took en masse and healed up within a few days. However, on account of later shrinkage of the upper lid and the ectropion of the lower lid, there was imperfect closure at the outer one-half of the palpebral fissure. A third skin grafting operation was performed four months later utilizing the skin from the left upper lid, with the result that only a slight ectropion is still present at the outer canthus, as shown in Figure 4. This we expect to correct in the near future.

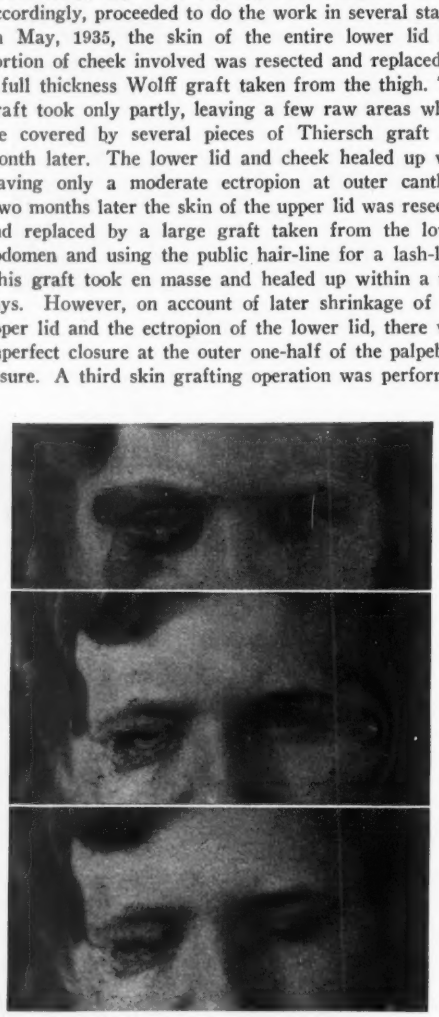

Figure 4. Congenital pigmented nevus of the lids.
A. Before operation. (Top)
B. After operation—eyes open. (Middle)
C. After last operation—eyes closed. (Bottom)

Case 5. Shrunken eye socket. M. H., 31 years of age, had left out the prosthesis from her right eye for a period of six months while confined to bed by illness. The socket shrunk so that no prosthesis could be inserted. Several operations consisting of canthoplasty, enlargement of the socket through incisions and insertions of dental molding compound failed, as shrinkage of the underlying tissues invariably extruded the mold after a few weeks. On August 15, 1935, the socket was enlarged and a full thickness Wolff graft, taken from the thigh and wrapped around a dental compound mold, was inserted into it. The lids were sutured over the mold. The graft took well as shown in Figure 5 and the patient has been able to wear a prosthesis since.

Figure 5. Shrunken eye socket.
A. View of socket after operation. (Top)
B. Same with prosthesis inserted. (Bottom)

Case 6. Retrobulbar tumor, exophthalmos and divergent strabismus. M. L., aged 20 years, was admitted to our clinic in September, 1933, with a marked proptosis and displacement upwards and outwards of the left eye, the divergence amounting to 50 degrees. A soft mass was palpable in the nasal portion of the orbit. She stated the left eye had begun to protrude at the age of 7, progressing during the course of the next six years and remaining stationary since. Her left vision was 6/200 and there was partial atrophy of the optic nerve. X-ray examinations of the orbit and sinuses were negative. Through a semilunar incision in the nasal conjunctiva and Tenon's capsule a two cm. dermoid cyst was removed from the muscle cone. Six weeks later, a tenotomy of the external rectus and a resection of the internal rectus was performed. At the same time a small symblepharon which had resulted from the first operation was corrected by undermining and advancing the adjacent conjunctiva. This left a residual divergence of 30 degrees and an upward deviation of 20 degrees. In September of 1934 a tucking of the inferior rectus and a four mm. resection of the

internal rectus was performed with the result as shown in the accompanying photo.

Figure 6. Retrobulbar tumor, exophthalmos and divergent strabismus.
A. Before operation. (Top)
B. After last operation. (Bottom)

Case 7. Entropion, symblepharon and convergent squint. D. N., male, aged 5 years, was admitted to the hospital in January, 1936, with a complete adhesion between the palpebral conjunctiva of the lower lid and the ocular conjunctiva, thus obliterating the fornix. The lower lid was markedly inverted, the lower one-half of the cornea covered by a dense opacity and the left eye converged 15 degrees. All these had resulted from a lye burn three months previous to admission. Under general anesthesia a one cm. incision in the conjunctiva, seven mm. below limbus, was made. All adhesions severed and some excised and the defect covered by a mucous graft obtained from the lower lip. The graft took in toto, leaving a fairly deep fornix, but the entropion still persisted necessitating a second operation. This was performed two months later, by excising some of the remaining scars and drawing the lid down by retention sutures which were fixed to the cheek by adhesive plaster. The result is shown in Figure 6. The convergent squint will be dealt with later.

Case 8. Coloboma of the left upper lid. Keratitis e lagophthalmo. F. N., male, aged 32 years, consulted me on account of almost a total absence of the left upper lid which he attributed to a neglected birth injury. He stated his left eye had always been irritated and left vision poor but that of late his eye has been painful and more injected. Findings: The upper lid was practically absent in the temporal three-fourths, being drawn up to the very brow and exposing several bands of angry-looking conjunctiva which were adherent to the everted skin. The lower lid was hypertrophied and drawn up to cover part of the cornea. Lid closure was impossible even with the strongest effort. The upper two-fifths of the cornea were ulcerated and keratosed and the left vision equaled 8/200.

Figure 7. Entropion, symblepharon and convergent squint.
A. Before operation. (Top)
B. After operation. (Bottom)

At operation, after having freed and excised all adhesions and scars, the atrophic musculature of the lid together with the conjunctiva were brought down and lid closure performed by the Wheeler method. The skin defect was covered by a large graft taken from the back of the left ear. The graft took in toto and the lids remained closed for four to five weeks when the adhesive bands gradually thinned out and were unable to maintain closure. In the course of the next two months further shrinkage of upper lid took place, exposing the upper part of the cornea, although forcible closure could be obtained. Two more plastics were performed, the last one consisting of resetting the outer canthus, shortening of the lower lid and utilizing the removed skin as a graft for the upper lid. The result may be considered fairly good and complete closure of the palpebral fissure is present at shown in Figure 8.

Figure 8. Coloboma of left upper lid.
A. Before operation. (Top)
B. After operation—eyes open. (Middle)
C. Same—eyes closed. (Bottom)

SUMMARY AND CONCLUSIONS

1. The principals of plastic surgery, as related to the orbit, are briefly discussed.

2. Operations for cicatricial ectropion, entropion, symblepharon, exophthalmos, colobomata and nevi of the lids and shrunken eye sockets are briefly described and illustrated.

3. It is felt that plastic surgery of the eye best be done by the ophthalmologist who is familiar with the anatomy and physiology of the region and who can develop the technique by a little practice and interest in this type of work.

4. Patients presenting deformities about the eye should be encouraged to undergo plastic operations with the assurance that, if not completely cured, at least a great deal of improvement can be accomplished.

DISCUSSION

Dr. H. L. Ford, Champaign: I would like to ask Dr. Folk a question. In fixing this full thickness graft, do you use sutures only at the periphery, or do you also use central black silk sutures? Do you feel it necessary to make multiple small perforations to aid in the exudation of serum?

Dr. Harry Woodruff, Joliet: Dr. Folk made one statement that I think should be qualified, that is, that any amount of skin could be taken from lid to repair another.

The fact that three men were scheduled to discuss this paper, two of whom are not here, and Dr. Deal says he has not had experience in this kind of work, shows that the work is so infrequent that the average ophthalmologist has difficulty in acquiring the experience required to do the work. Outside of a few large clinics you do not get many cases. I remember Dr. Hotz of Chicago was considered a pioneer ophthalmologist in skin grafts, using exactly the same method Dr. Folk has described in stretching the skin by suturing the lid to the cheek or forehead, to put as large a graft as possible into the area. I hoped that Dr. Folk might say something about cases in which, in addition to the skin destroyed, you have a destruction of the mucous membrane also. That is where you have a major job, one that requires a real surgeon, and perhaps you may have to go to a general surgeon. Certainly, some operation must be performed by which you can cover one surface by mucous membrane if you can get it. I think Blair of St. Louis has demonstrated some wonderful work in plastic surgery. He is a general surgeon, but I think any eye man can learn from him how to do these operations. The skin can be raised on the forehead sufficiently to get a mucous graft on the inner surface of the flap, and after that has adhered the entire flap can be loosened, leaving only a pedicle, and swinging that into position so as to produce a complete lid. I think with Dr. Folk it is a very fascinating branch of surgery.

Dr. Hiram J. Smith, Chicago: We used to see many lid accidents from broken glass. Fortunately with the use of non-shatterable glass they are less frequent. I have had a lot of experience with mucous grafts from the mouth to take the place of the palpebral conjunctiva. At first one is somewhat disappointed in seeing that it is thicker than desired, but the mucous membrane gradually takes on the function and appearance of the conjunctiva. I have seen Dr. Folk's work at the University of Illinois, and I congratulate him on having the courage to enter this field.

Dr. M. L. Folk, Chicago (closing): I want to express my thanks for this excellent discussion.

In reply to Dr. Ford's question, we use four sutures applied to the graft before it is removed, suturing it at each side. Then we use silk sutures about 3 or 4 mm. apart. Wheeler says if they are too close together adhesions form more readily and healing is more prompt. As to perforating the skin to allow discharge of serum, I have never found it necessary.

I did not mean, Dr. Woodruff, that the entire skin could be removed from the lid. I meant that one should not be timid about using that skin. You cannot take 5 or 6 cm. but you can take 1 or 2 cm. without any interference with function. We have had no case, except the last mentioned, where we had to replace the whole conjunctiva and lid. You can take the skin first if you have any muscle, or pull up some muscle from above or below, and take some mucous membrane from the lip. One can take a large-sized graft from the lip and it heals up very nicely without any trouble after the first few days.

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PELVIC ENDOMETRIOSIS

W. A. Malcolm, M. D.

PEORIA, ILL.

Endometriosis (Endometrioma) is an abnormal growth of endometrial tissue arising in or near the female pelvis. The endometrium-like tissue is made up of glandular structures with typical stroma and round cell infiltration. This tumor menstruates, enlarges slowly, invades tissue progressively, is curable and not malignant, and after the menopause or castration it retrogresses and atrophies. This is the only tumor that has a definite cure by removal of ovarian hormone.

The history of this condition dates back to about 1860 when Rokitansky described it as a definite pathological entity for the first time. Then, 1893-96, Von Recklinghausen expounded the theory that it was due to Wolffian rests. In 1896, Cullen made first mention of adenomyoma of round ligament and has added considerable knowledge to this subject. In 1899 Russell considered it due to Mullerian duct remnants and

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described it first in the ovary. By 1920 Cullen had finished an extensive amount of work on adenomyomata, to disprove some of the above findings; but in 1921 Sampson brought forth his implantation theory which has been the most accepted to date. Since that time much has been in our gynecological literature relative to this disease.

The implantation theory is that the epithelium escapes during menstruation through the fimbriated end of the tube and these regurgitated fragments lodge and implants grow. He proved that endometrial-like tissue in the ovary was not metaplastic. Sampson showed where the implants are relatively frequent whereas tumors of embryonic rests are rare. This development occurs during menstrual life and menstural blood has been seen coming out of fimbriated end of tubes at the time of operation as well as found free in the tubes. Implants on the ovary are usually on the under or lateral surface of the ovary and associated with conditions favoring a back flow, such as retroversion or fibroids. Cron proved the viability of endometrium in vitro, while Jacobson, has produced similar lesions by autotransplantation.

The serosal theory by Meyer in 1919 assumes that any part of the pelvic peritoneum derived from celomic mesothelium is capable under certain circumstances of undergoing a metaplasia or reversion to Mullerian tissue—retaining its embryonal growth potentialities. This explains all the wide-spread lesions in the round ligament, umbilicus, rectovaginal septum, vulva, vagina and areas where it is difficult for the Sampson theory to explain.

Halban disproves both above theories and has done extensive work to prove his hypothesis of metastatic endometrium through lymph channels.

The pathology, like the symptoms, varies with the extent and location of the disease. Histologically, the lesions are made up of glands of columnar epithelium, sometimes with cilia, usually with a stroma and round cell infiltration about the glands. In lesions of uterine cornu, of peritoneum and of scar tissue, the stroma may be missing. In ovarian lesions the presence of endometrial-like glands may be reduced. King says paralutein cysts are different from endometriosis in that they have an epithelial lining with a wavy fibrous tissue beneath that differs much from stroma. Most perplexing question is cornual lesions—endometrioma, endosalpingioma or salpingitis isthmica nodosum. Evidence of chronic inflammation about mucosa instead of stroma is indicative of the latter. Cysts with blood retention at time of operation may be paralutein, lutein, follicle and malignant cysts. The chocolate-like fluid, the adherence and induration of tissue, the small dark blue spots scattered on peritoneum and puckering of the lesions are characteristic. These "chocolate cysts" of the ovary vary from small spots on the surface to multiple sizes and deep cystic areas, and may take up all the structure of the ovary. They are lined with cuboidal epithelium and surrounded by stroma resembling endometrium. This tissue undergoes changes, as uterine endometrium, the discharge of blood and desquamated cells are retained in its cavity or may rupture through the capsule to the adjacent structures. The retention of blood in the cysts gives it the syrupy, tarry characteristics. This, when in contact with adjacent tissue gives firm multiple adhesions and a continuation of the condition at each succeeding menstrual period. It occurs in both ovaries in about 30% of the cases.

Symptoms are often associated with other abnormalities as malpositions and fibroids. A fibroid uterus complicated with pelvic adhesions and acquired dysmenorrhea with no history of a previous infection is especially suggestive. Cases usually occur in active sex life varying between 25-50 years, yet the disease may be found in women as young as 20 or past the menopause—the latter tumor being inactive. Sterility is a common associated factor present in 22% of George Van Smith's cases and 40% of Keen's cases, especially in endometriosis of the ovary, tubal cornu or wall, or will soon be acquired. Approximately 50% have menorrhagia or metrorhagia. A scanty discharge of dark blood immediately before or after a normal, profuse, or prolonged period is a common occurrence. History of an acquired or increasing dysmenorrhea is present in over one half of the cases. Intermenstrual discomfort or pelvic pain with an exaggeration of pain at the period time is characteristic. Midlumbar backache is frequent.

Adenomyoma (Adenomyosis) at first was thought to be a special form of uterine fibroid

with glandular elements. They resemble an ordinary fibroid except that they are not definitely circumscribed and can not be shelled out from adjacent tissue, not large and often occur in the posterior wall near the horns of the uterus. The structure is made up of fibromyomatous tissue and glands of low cuboidal epithelium simulating uterine mucosa, surrounded by uterine stroma-like tissue. Some authorities feel it is by invasion from uterine mucosa, penetrating the wall during menstruation through the venous circulation or lymph channels of the uterus as it often occurs in women who have had three or four children, or children close together.

It may occur at the uterine horns from ingrowths of uterine and tubal mucosa. Those that are found associated with gonorrhea and tuberculosis may be a true salpingitis isthmica nodosa. Symptoms are much like ordinary fibroids. Dysmenorrhea is more distinctive symptom.

In rectovaginal endometriosis, at first, small movable nodules behind cervix do not include the rectal mucosa but in the course of the disease the pelvis is converted into a board-like, nodular mass with increasing obstipation simulating cancer, syphilis or tuberculosis. The pain with defacation increases at each period. Bleeding from the rectum occurs in advanced cases. We may have a stricture of the rectum with the posterior vaginal wall involved.

In the round ligament a nodule appearing at the ring, painful and enlarging at the periods, increasing gradually in size and adherent to adjacent structures, is suspicious of endometriosis. Laparotomy scar or involvement of umbilicus shows a firm nodule tender and painful during period, adherent to skin and fascia, tending to grow progressively larger. Appendix, broad ligament and intestinal wall, when involved, are usually associated with other pathology. Vagina, vulva, omentum uncommonly have lesions associated with the usual symptoms of the disease.

If pregnancy occurs a definite decidual reaction is noted showing it is made up of definite endometrial tissue, and if pregnancy be followed by lactation, this usually postpones a recurrence.

Since Sampson brought the subject to the attention of the gynecologists, much has been written, and in spite of the clinical interest, the preoperative diagnosis is rarely made. It should be suspected in all cases that give a history of acquired dysmenorrhea, abnormal bleeding, and pelvic pains which seem to be markedly exaggerated at the period time and have associated abnormal findings, lower temperature and lower leucocytosis than is anticipated with other factors in the case. While the diagnosis is most often made at laparatomy, a biopsy should always be taken, or all tissues sent to laboratory, for in many cases the pathologist makes the diagnosis. This materially adds to the after treatment and follow up on each case. It has to be differentiated from salpingitis, appendicitis, ectopic pregnancy, fibroids and in fact all pelvic conditions associated with bleeding and pelvic pain.

There is no stereotyped form of treatment; it depends on the extent of the disease, age and social condition of the patient. The end results of radical and conservative treatment are too little known to give any definite data. It is a disease of women in the childbearing period where conservative treatment is desired. Too often, radical measures must be adopted, so surgery is the treatment of choice. An effort is usually made to save enough ovarian tissue to retain the function of the genital organs and fertility. While treatment of nodulations and infiltrating implants on the broad ligament, bowels and rectovaginal septum, etc., are determined by the extent of the involvement. Easily accessible nodules may be excised; otherwise if difficult or extensive they are not disturbed and a bilateral oophorectomy and hysterectomy is performed. X-ray is resorted to in some instances with follow up treatment where conservative measures fail. A menopausal dose is given and technique varies with the operator. Radium is used as is x-ray in variable numbers of milligram hours as to location and type of the disease to be treated.

Conclusion:

1. We do not know why occurrence of endometriosis is so limited when there are constant opportunities for it to develop.

2. It is a disease essential to ovarian hormone.

3. Treatment varies with location and extent of the disease, but it should be conservative dur-

ing the child bearing period, followed by x-ray or radium in castration doses when necessary.

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DISCUSSION

Dr. D. D. Smith, Decatur, Ill.: We should congratulate Dr. Malcolm on his excellent paper on this difficult subject. We must agree with him that the diagnosis of endometriosis is very difficult, with the probable exception of two varieties, implants on the umbilicus and nodules on or behind the cervix. Even the diagnosis of the latter is very elusive.

As to the chocolate cysts, I think we find that endometriosis of the ovary and chocolate cysts with endometrical implants are of rather uncommon occurrence, while we do have many chocolate cysts of the ovary that are not of endometrical origin. We have corpus luteum cysts of the ovary that attain large size, have some tarry, syrupy liquid in the cyst content, but usually find remnants of corpus luteum, also some old ovarian hemorrhages such as might occur after ovarian abscess. In none of these do we find endometrical implants.

Now as to the symptoms, we must differentiate between endometriosis and adenomyosis as they are two distinct conditions, unless we use the terms adenomyosis interna and externa. In endometriosis or adenomyosis externa according to Sampson's theory, we find the presence of implants which are probably from retrograte flow of menstrual blood from uterus into the peritoneal cavity. Adenomyosis externa is thought to be of embryonal origin and give no symptoms.

Conservative treatment, as Dr. Malcolm has said, is usually employed in young women in the child bearing age. If at operation implants are found, cauterization or excision are to be tried. I do not think we can truthfully say that all these implants disappear or can be cured by surgery or other methods, because occasionally we find an individual whose condition has gotten beyond the period of hormonal influence, where, according to treatment, we have removed the hormonal influence and destroyed the ovarian tissue, and there is a retrogression of the endometriosis. In one of my cases several years ago the patient had typical endometrical implants in the umbilicus, on the uterus, ovaries, bladder, omentum and intestines. A bilateral oophorectomy was performed and also removal of the uterus followed by two series of deep x-ray therapy. This individual continued as before and died within a year of general carcinomatosis. We had the tissue examined by a competent pathologist and no carcinomatous tissue was found. Of course, there was the possibility of some associated malignancy with the endometriosis. X-ray therapy may be employed in the treatment of endometriosis, but again, due to the fact that these patients are young women, we produce sterility and also throw them into a premature menopause.

Dr. Charles E. Galloway, Evanston, Ill.: This is a very good review of endometriosis. As to origin, Sampson's theory as to implantation has been proved experimentally. Meyer's theory of prozoplasia can be very easily demonstrated because we can see it under the microscope. Then, too, we find endometriosis in old pelvic infection more often than anywhere else. It is the general influence of the peritoneal cells taking on a glandular function which in turn transforms the connective tissue around it into cystogenic tissue, similar to that found in the endometrium. Halban's theory has never been proved because we never have found endometrical implants along lymphatic ducts. The Muellerian duct arrests theory is plausible because we find arrests in all parts of the body. The endometrial transplant theory, or the theory of Sampson, is very common especially after abortion and where the uterus is perforated. We do have these theories substantially backed up by microscopic examination with experimental evidence.

The other statement in the paper that I would like

to take exception to is that these tumors menstruate. I do not think they do. I do not believe that more than four out of sixteen menstruate. For instance, the sections that are thrown on the screen showed endometriosis, but showed no blood in these glands. If you take an endometriosis and cut through the sections carefully I do not think you will find evidence of any menstrual function in more than four out of sixteen. The majority of all lesions of endometriosis do not function. Therefore, the conservative treatment of endometriosis is certainly well justified. I think the author is quite right that we should be very careful that we do not mutilate these young women, even taking a chance on a second operation.

(Dr. M. E. Davis did not return his discussion.)

POSTPARTUM HEMORRHAGE IN OUTPATIENT OBSTETRICS

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Obstetrics, which is presumably a physiologic process, may become at a moment's notice pathological. Of the complications which may arise with little warning, one of the most formidable is postpartum hemorrhage. Due to the gravity of this emergency, particularly in out-patient obstetrics, we have analyzed 455 cases of postpartum hemorrhage occurring in 10,651 consecutive deliveries conducted in the home by the Chicago Maternity Center, in an attempt to find the most important factors of etiologic significance.

A loss of 500 c.c. of blood during or immediately following the third stage of labor was classified as a postpartum hemorrhage. In all cases the amount of blood lost was estimated by an interne or resident. Because we are dealing with a transient group of young doctors we have deemed it advisable to overemphasize the seriousness of blood loss, with the natural result that in many instances they have overestimated the actual amount of blood spilt. We take great pains to encourage this attitude, so as to inculcate in their minds a well justified fear and respect for hemorrhage.

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In 10,651 consecutive deliveries there were 455 cases of postpartum hemorrhage, an incidence of 4.2% or one in 23.5 deliveries. If we deduct 43 cases in which the babies weighed less than five pounds, we find that the incidence of postpartum hemorrhage in full term deliveries was 4% or one case in 25 deliveries.

Table I. shows the relation of the parity of the patient to postpartum hemorrhage.

TABLE I. PARITY

Type	*Number*	*Percentage*
Primipara	85	18.7
Secundipara	94	20.6
Tertipara	80	17.5
Quadripara	50	10.9
Quintipara	47	10.6
Multipara (6 and over)	99	21.7
Total	455	100.0

As can be seen from this table, 18.7% of this series were primipara and 81.3% were multipara, which is approximately the normal relationship of primapara to multipara in all our cases at this clinic. Therefore, postpartum hemorrhage was fairly evenly distributed among the various parities, with the very usual but extremely important exception of an increased tendency toward this complication in the higher multiparas. This is a very important observation made also in other clinics and far too often overlooked.

Regarding the duration of labor in these cases, we have used eighteen hours as the normal length of labor in a primipara and twelve hours in the multipara. Following this standard, we found that 136 or 30% of these cases had what we considered prolonged labors. Still further, if we arbitrarily assume that one and one-half hours is the normal length of the second stage, we found that 80 or 17.5% of these patients had a prolonged second stage of labor, and finally using one hour as the limit for completion of the third stage of labor, we found that 63 or 13.1% had their placentae retained more than this length of time.

Overdistention of the gravid uterus was a significant factor in the causation of this complication, as shown by the following three conditions: First, twin pregnancies occurred fifteen times in this series, an incidence of one in 32.5 deliveries or 3.7%. That this is an unusually high incidence of twin pregnancies is

adequately demonstrated by the fact that the average occurrence of twin pregnancies at our clinic is one in 91 births or 1.09%. Secondly, referring to Table 2, it is readily apparent that the increased weight of the baby is of extreme importance.

TABLE 2. WEIGHT OF FETUS

Pounds	*Number*	*Percentage*
5 and less	43	9.4
5 to 8	172	37.9
8 and over	240	52.7
Total	455	100.0

It is obvious that the weight of the child is a consideration of no little importance when we consider that in 52.7% of these cases the baby weighed eight pounds and over. We also wish to point out at this time that 114 of these babies weighed nine pounds or over, which on analysis means that while over 50% of the babies in this series weighed over eight pounds, 25% of the total number weighed nine pounds or over, emphatically demonstrating the relationship between the size of the fetus and the production of postpartum hemorrhage.

Thirdly, polyhydramnios was present in five or one per cent. of the cases.

The methods employed in the management of the second stage in these cases were as shown in Table 3.

TABLE 3. MANAGEMENT OF THE SECOND STAGE

Type of Delivery	*Number*	*Percentage*
Spontaneous	370	83.0
Forceps extraction	53	11.2
Version and extraction	12	2.6
Destructive operations	4	0.8
Breech extraction	16	2.4
Total	455	100.0

As can be seen in Table 3, 85 of these cases were terminated by some operative measure from below, an incidence of 17%. When one takes into consideration that the normal operative incidence at this clinic is only eight per cent. one will appreciate the important rôle that operative deliveries have in causing postpartum bleeding.

The manner of management of the third stage of labor is revealed in Table 4.

TABLE 4. MANAGEMENT OF THE THIRD STAGE

Type	*Number*	*Percentage*
Spontaneous	145	31.8
Early expression	180	39.5
Credé	60	13.4
Manual removal	70	15.3
Total	455	100.0

The third stage was completed either by spontaneous or early expression in over 70% of the cases. The Credé maneuver was attempted only when the placenta failed to detach after a reasonable period to avoid entering the uterus too often, with its resulting increased morbidity. When manual removal of the placenta had to be resorted to, all solutions were refreshened, the operative field again cleansed, the patient catherized and sterile gloves were reapplied.

No anesthesia was used in 368 or 79% of these cases. Ether was the anesthesia of choice in 40 or 8.7%, pudenal block was used in 10 cases or 2.1%, and parasacral anesthesia was used in 47 or 10.2%. It is apparent that there is a slight tendency to increased postpartum bleeding in these operative cases where regional or local anesthesia was employed.

The amount of blood lost in these 455 cases was as follows: 500 to 1000 c.c. 290 cases, 1000 to 2000 c.c. 151 cases, and over 2000 c.c. there were 14 cases. The average amount of blood lost in this series was 888.6 c.c. Fifty of these 455 patients were observed to go into shock, or 10.9%, and of those women who showed evidences of shock only three lost less than 1000 c.c. of blood. However, it is our experience at the Center, based on a critical observance of these patients, that the actual amount of blood lost in any given case is only a relative factor in the production of shock, inasmuch as a large obese type of individual can withstand the loss of a considerable amount of blood with no serious systemic reaction, while a thin asthenic woman may show marked signs of shock after a comparatively small hemorrhage. This is a very important factor to keep in mind in the prevention and treatment of this compilation.

Table 5. shows a group of cases which for a better name we have designated as miscellaneous causes occurring in this compilation.

TABLE 5. MISCELLANEOUS CAUSES

Rupture of the uterus	2
Polyhydramnion	5
Fibroids	3
Abruptio placenta	10
Placenta praevia	9
Bicornate uterus	1
Acute inversion	1
Varicosities of vulva	2
Total	42

Maternal Mortality. Two women died in this series of 455 cases, an incidence of 1 in 227 cases or 0.44%. Following is a brief case report of these fatalities.

Case 1. Mrs. D. L., colored, aged 28 years, gravida IV, three full term normal deliveries. Present labor lasted four hours, spontaneous. Third stage lasted fifteen minutes. Placenta delivered by simple expression, and was immediately followed by a severe gush of blood estimated as 1500 c.c. Patient went into shock. She was given 300 c.c. of a 20% solution of glucose in the vein, and adrenalin and caffeine were administered. Gloves were changed and the uterus was manually explored for a possible rupture, but none found. The patient had a rapid downhill course and died in nine hours. The uterus was obtained after it had been perforated by an undertaker's trocar, and an incomplete tear was discovered in the lower uterine segment.

Case 2. Mrs. M. C., white, aged 35 years, gravida IV; two previous spontaneous deliveries and one induced abortion. Labor lasted eight hours and was spontaneous. Placenta and membranes were retained and severe postpartum bleeding ensued. The placenta was removed manually and the uterus packed with 10 yards of plain sterile gauze. Pituitrin, gynergen and cardiac stimulants were given. Fluids were administered under the skin and in the vein. The patient expired in two and one-half hours. Autopsy was refused. Clinical diagnosis, postpartum hemorrhage due to retained placenta.

TABLE 6. TREATMENT

Type	*Number*	*Percentage*
Medicinal	357	78.0
Manual removal	70	15.3
Parenteral fluids	53	11.5
Uterine pack	30	6.0
Blood transfusion	13	3.8

In Table 6 several modes of treatment were often employed in the same case, so that there will be an overlapping. A brief outline of our management of the third stage of labor in the home and the treatment employed when the case is complicated by excessive bleeding may prove interesting as well as instructive. As soon as the baby is born the interne administers one ampule of pituitrin subcutaneously, and then waits for the signs of placental separation, such as rising of the fundus towards the right side, palpation of a soft boggy mass in the lower uterine segment, advancement of the cord and a slightly brisker bleeding. No attempt is made to massage the uterus until these signs are present, so as not to disturb the normal physiologic formation of a retroplacental blood-clot. If bleeding becomes profuse and the placenta is still retained, an attempt is made to Credé the placenta out, and if this fails the placenta is removed manually under the strictest aseptic precautions. The placenta must be removed at one maneuver and the operator's hand must remain in the uterus until the entire placenta is delivered. This will obviate the necessity of repeated insertions of the hand into the uterine cavity with its increased possibilities of infection. If bleeding occurs after the placenta is delivered, a more serious problem presents itself. Pituitrin should be given thus, one ampule by hypodermic or three minims intravenously. The new ergot derivatives, such as ergotrate and ergoklonin, have been found very efficacious in causing the uterus to contract, when given either subcutaneously or intravenously, when a more rapid action is desired. At the same time the operator can compress the anterior lower uterine segment by pressure with his hand filled with gauze in the vagina and at the same time with his external hand he should sharply anteflex the body of the uterus over the symphysis. If bleeding continues, no more time should be wasted and the uterus tightly packed with ten yards of plain sterile gauze, by packing with one hand in the uterine cavity from side to side. All cases, even those that do not go into shock, should be immediately treated for blood loss by normal saline solution under the skin and in the axilla or thighs and hypertonic solutions of glucose and gum acacia intravenously. All severe cases, as soon as a donor is available, should be typed and cross matched and should be immediately given no less than 700 c.c. of blood. The method used is unimportant, the main consideration is to give the woman life-sustaining blood as soon as possible.

Discussion. We have attempted to show by a critical analysis of 455 cases of postpartum

hemorrhage which occurred in 10,651 patients who were delivered in their own unsanitary, squalid homes by young doctors, that many diverse factors operate to predispose to the production of postpartum hemorrhage. Among the more common causes, as shown by a study of the tables, may be mentioned unusually large and post-mature babies, multiparity, over-distention of the uterus, prolongation of the first and second stage of labor, maternal exhaustion, retained placenta and membrane, operative deliveries, and last but most important is improper management of the third stage of labor. Therefore, prophylactically we should bend all our efforts towards recognizing early these conditions that predispose to postpartum hemorrhage and thus, by expecting it, will be better prepared. Unnecessary and unwarranted interference with the normal mechanism of the third stage of labor is to be decried. Conservation of blood is paramount, and blood transfusion should be thought of immediately and started early.

Summary. 1. An analysis of 455 cases of postpartum hemorrhage in 10,651 or an incidence of four per cent. is herein described.

2. The higher the multiparity the more prone is the patient to hemorrhage.

3. Prolongation of labor, 136 or 30%, is a vital factor.

4. Over-distention of the uterus whether due to multiple pregnancy, polyhydraminos or large fetus, was a factor in 260 cases.

5. Operative deliveries increased the possibilities of hemorrhage.

6. The average amount of blood lost in this study was 888.6 c.c.

7. Of the miscellaneous causes, five were traumatic in origin.

8. There were two maternal deaths in this series, given a mortality incidence of 0.44%.

CONCLUSIONS

1. Good obstetrics can be done in homes under seemingly unsurmountable obstacles, if properly supervised.

2. Operative obstetrics especially in home deliveries should be done only when strictly indicated.

3. Uterine exhaustion in the first stage of labor should be avoided by the administration of large quantities of fluids and carbohydrates, plus morphine sulphate alone or in combination with a synergist to give the patient plenty of rest. Morphine should not be given within three hours of the expected birth of the child.

4. One should acquaint himself with the proper management of the third stage of labor and avoid all meddlesome manipulations.

5. Blood must be conserved during and after labor to avoid serious infections and even death.

6. Small quantities of blood lost over a period of hours may prove more dangerous to the patient than a sudden large outpouring of blood, which quickly attracts attention.

7. Blood transfusions in amounts not less than 700 c.c. should be given early and freely.

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NEUROBLASTOMA, FROM THE STANDPOINT OF THE ROENTGENOLOGIST

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Virchow in 1864 suggested the nervous tissue origin of these congenital suprarenal tumors but it was not until 1891 that Marchand pointed out a resemblance between the structure of the tumor and that of the developing sympathetic system, suggesting that the tumor was derived from neuroblasts. (Boyd.[1]) According to Wiesel, quoted by Kwartin and Twist,[11] with the cessation of embryonal life the evolution of the suprarental medulla is not necessarily completed. Even beyond puberty the medulla contains formative cells or neuroblasts. This explains why neuroblastomas are most frequently found in the suprarental medulla.

Neuroblastomas are composed of small round cells with dark hyperchromatic nuclei closely resembling the cells of a small round cell sarcoma (Sturtevant and Kelly[19]) and for many years were so considered. The distinguishing characteristics microscopically are the presence of fibrils that do not give the characteristic staining reactions of collagan, fibroglia or neuroglia. (Capon.[2]) The cells are also apt to be arranged in longitudinal bundles and occasion-

Material from the State University of Iowa, Iowa City, Iowa.

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ally in masses around which the neuroblasts are grouped so as to give an appearance commonly known as "rosettes." (Wahl.[21]) An extremely important statement is made by Boyd,[1] "The absence of 'rosettes,' however, does not negative a diagnosis of neuroblastoma."

Neuroblastoma may arise from any portion of the sympathetic nervous system or cranial nerve and occasionally they occur in the central nervous system in which latter case they may be encapsulated but do frequently infiltrate and simulate gliomas. The main seat of such tumors, however, are the suprarental gland. (Boyd,[1] Ewig.[4])

There are two clinical types, Pepper and Hutchinson. We are concerned only with the Hutchinson type.

Ewing[4] divides these tumors into three types, 1. Neuroma ganglioma, 2. Neurocytoma or neuroblastoma and 3. Chromaffin cell tumors or paraganglioma. The following classification from Tidswell and Sear[49] showing the embryology of the nervous system will help explain the relationship of these various tumors, and may possibly clarify the relationship of the neuroblastomata occurring in children with which this paper deals.

Epiblast		Sympathogomia	
Ependyma	(ependymoma)		
Neuroepithelium	(medulloblast)	Sympathoblasts	Phaechromoblast
Neuroblasts	Spongioblasts	Ganglion cell	Phaechromocytes
Neurocytes	Astroblasts		Phaechromocyto
	Astrocytes		chromaffinomo
			Paraeanglioma

Case 1. R. S. Hospital Number G. 8536. White. Age 4 years. Admitted Sept. 9, 1932. Family and past history negative.

One month before entrance patient's parents noticed that his left eye seemed to be more widely open than the right. A few days later the right also seemed to bulge. The eyes have been rapidly becoming more prominent.

Examination: The left upper eyelid had a marked discoloration involving the whole upper lid. The right pupil measures 4 mm. and reacted well to light. The left pupil measured 6 mm. and reacted very sluggishly to light. On 9-8-32 a biopsy of the left orbit was done. Dark hemorrhagic tissue was exposed. By 9-13-32 the proptosis of the left eye was much less. No palpable cervical glands and no masses felt in the abdomen. There was no edema of either disc. Patient received 1600 r to each temporal region between 9-9-32 and 9-21-32 with the following factors: 200 K.V., 5 M.A., 50 cm. distance, .50 cu. and 1.0 al. through a port of 8 by 10 cm. Hg. was 70%, R.B.C. 3,570,000 and W.B.C. 7,600. Wassermann was negative. Patient was discharged Oct. 4, 1932, much improved.

Patient returned Nov. 28, 1932, having lost about four pounds with admission temperatures of 101. The proptosis had almost disappeared. Pupils both reacted to light and measured about 3 cm. His head now measured 52.5 cm. in circumference, which was the same as in Sept. Hg. 53% R.B.C. 2,400,000 and W.B.C. 6,300. The differential was Polys. 59%, Mono. 5%, Eocin. 7%, Basket cells 12%, Unclassified 1%, large Lympho, 5%, small Lympho. 11%. The red cells showed some poikolocytosis, anisocytosis and polychromasis. The blood calcium was 10 mgms. per 100 cc. and blood phosphorus 5.6 mgms. per 100 cc. and blood cholesterol 229 mgms. per 100 cc. The blood globulin was 2.92, albumin 2.53, fibrinogen .391. The arm band test was negative. The bleeding time was 8½ minutes, capillary coagulation time 3 minutes, venous coagulation time 4 minutes, fragility .44 - .36, prothrombin time normal, platelets .27%. There were some palpable inguinal glands and the liver was slightly enlarged. Patient received 1000 r to both groins between 12-8-32 and 12-13-32 with the following factors: 130 K.V., 5 M.A., 37.5 cm. distance, .25 cu. and 1.0 al. to a port of about 10 by 15 cm. Patient's temperature continued to be slightly septic and his hemoglobin and blood count continued to fall. On 12-15-32 his hemoglobin was 48%, R.B.C. 2,390,000 and W.B.C. 3,800. He was discharged Dec. 21, 1932.

Patient returned in February, 1933, in very poor condition, being greatly emaciated. Both eyes were markedly proptotic, the left more than the right. The veins of the skull were dilated with separation of the sutures. There was a large soft tissue tumor mass in the left frontoparietal region. All cervical glands were palpable and hard. All gums were infiltrated with spongy tissue. Liver definitely enlarged. No other masses in abdomen. Spleen was not enlarged. There were hard firm bilateral inguinal glands. Circumference of head is now 55 cm. Hg. 25%, R.B.C. 1,490,000, W.B.C. 3,600. Marked anisocytosis and poikilocytosis. Blood cholesterol 227 mgms. per 100 cc., blood calcium 9.2 mgms. per 100 cc, blood phosphorus 4.4 mgms. per 100 cc., albumin 2.8, globulin 2.68, fibrinogin .288, Van den Berg 1 indirect. The bleeding time was 2 minutes, capillary and venous coagulation was 3 minutes, fragility .44 - .36, prothrombin time was 10, 8½, 11, 11, platelets .05%, and clot retractility was 0 in five hours. Patient failed rapidly and died March 12, 1933, continuing to run a septic temperature. No post mortem obtained.

Case 2. I. W. Hospital Number J. 3201. White. Age 5 yrs.

Admitted Mar. 23, 1934. Family and past history negative. In September, 1933, patient began having dull pain in the right hip and lower back. Soon developed a slight limp. Was put in hospital at home in January, 1934, and had been bedridden ever since. Patient has had a very poor appetite since January, 1934, and had lost a little weight. Examination revealed some tenderness to pressure on the medial aspect of the right hip with some impairment of motility. Temperature on this admission ranged from 101 to 103. Hg. 85%, R.B.C. 4,410,000, W.B.C. 6,400, Polys. 22%, large Lympho.

28%, small Lympho. 20%, Basket cells 16%, Mono. 6%, Baso. 1%, Naked nuclei 3%, Unclassified 4%. Bence-Jones protein not found but urine only examined once. O. T. negative 1 to 500. Wassermann negative. Agglutination test for Malta fever, paratyphoid A and B and typhoid fever all negative. Blood culture negative. The bleeding time was 1½ minutes, capillary coagulation time 4 minutes, venus coagulation time 5 minutes, prethrombin time 5, 6, 6, 7, fragility .44 - .36, clot retractility 4 plus, reticulocytes 3.3%. Patient's course was uneventful and she was discharged on 4-27-34 with a Hg. 60% R.B.C. 3,420,000, W.B.C. 9.200.

Patient was readmitted May 22, 1934, with a history of constant headaches since previous discharge. The left eye had become swollen with occasional vomiting attacks. Patient has had severe pains in all extremities which kept her awake at night. Examination showed marked enlargement of the posterior auricular glands. There were four large tumor masses in the scalp with separation of the sutures. All cervical, axillary and inguinal glands were enlarged. Patient had a bilateral papilledema of both eyes. The spleen was not palpable. Hg. 60%, R.B.C. 2,500,000, W.B.C. 7,200, Neutro. 34%, Eocin. 1%, small Lympho. 23%, large Lympho. 15%, Endo. 1%, Basket cells 12%, Myelo. 4%, Band and Polys. 6%, Unclassified 4%. The blood phosphorus 4.5, blood calcium 11.3. B.M.R. was plus 11. On May 25, 1934, the biopsy of a cervical gland was taken. Patient continued to run a septic temperature and on June 11, 1934, x-ray therapy was given in an attempt to relieve pain. 200 r to both femora and to the medical portion of the left knee was given with the following factors: 200 K.V., 4 M.A., .50 Cu. and 1.0 al., through a port of 20 by 20 cm. This seemed to give patient some relief. Patient discharged June 20, 1934, and died at home about two months later.

Case 3. L. C. Hospital Number J. 5145. White. Age 4 years.

Admitted May 13, 1934. Family and past history negative. In October, 1933, patient contracted a bad cold and complained of pain in his right leg. Pain in leg grew worse and he became gradually weaker so that by April, 1934, he was unable to leave his bed. In April, 1934, his head began to enlarge. Two weeks before admission a small mass was noted on the buccal surface of the right cheek. This grew very rapidly so that on entrance patient was unable to close his mouth. Examination showed an emaciated hydrocephalic patient. There was wide separation of the sagittal suture. There was proptosis of both eyes. There was a palpable firm mass filling mouth and apparently arising in the ascending ramus of the right mandible. There were some slightly palpable cervical glands but many palpable inguinal and axillary glands. There ws a very firm solid mass in the left upper abdomen which was thought to be spleen. The liver was slightly enlarged. Hg. 30%, R.B.C. 2,500,000, W.B.C. 6,000, Neutro. 68%, Lympho. 20%, Eocin. 1%, Band and Polys. 3%, Basket cells 2% Unclassified 6%. Arm band test was negative. Bleeding time was 1 minute, capillary and venus coagulation time 4½ minutes each, prothrombin time 4 minutes, fragility .5 - .36, clot retractility 2 plus, platelets .35%, reticulocytes 5%. There was variation in the size, shape and staining of the red blood cells. Wassermann negative. The total blood protein was 5.77, fibrinogen .34, albumin 2.6, globulin 2.83, blood cholesterol 178 mgms. per 100 cc. blood calcium 9.75 mgms. per 100 cc., blood phosphorus 3.54 mgms. per 100 cc. Patient's course was steadily downwards and between May 21, 1934, and May 24, 1934, he was given 800 r to the left lateral skull and 800 r to the right lateral skull with the following factors: 200 K.V., 4 M.A., .50 Cu. and 1.0 al. at 50 cm. distance to a field of 10 by 15 cm. This was done because the parents insisted on some type of treatment. Patient died on May 25, 1934, and parents permitted a piece of the tumor mass in the mouth to be removed but no autopsy permitted.

Discussion—These three patients had proptosis, hydrocephalus, marked secondary anemia with destructive and proliferative lesions involving the greater portion of the skeletal system, including both the long and flat bones. No abdominal tumors were felt but as Hutchinson[8] pointed out, abdominal tumors are not always palpable. The Roentgen ray appearance of the first two cases is a characteristic finding. The "whiskers" seen along the left ischium of case 1 and along the lower end of both femora in case 3, in conjunction with the widespread destructive process should make the diagnosis. Boyd[1] has noted this peculiar type of periosteal reaction as noted along the skull giving it a "porcupine" appearance. Tileston and Wolbach (quoted by Holmes and Dresser[7]) also have mentioned these bony spicules occurring in the substance of the tumor involving the anterior fossa of the skull which had extended through an opening in the frontal bones. Holmes and Dresser[7] mention the periosteal reaction as being characteristic and state that they "may be accompanied by spicule formation in both the flat and long bones." These findings have also been stressed by Henle,[6] Vogt,[20a] Lewis,[14] Tidswell and Sears,[20] Lederer[12] and Klein.[10] Case 2 showed a destructive process of the skeletal system, rather widespread, with periosteal elevation along the shafts of both femora. These changes sometimes occur in leukemia (Karelitz[9]). Holmes[7] feels that a destruction in the long bones and a periosteal reaction is not uncommon in neuroblastoma whereas Geschickter and Lewis[18] feel that these findings are rare in neuroblastoma and are more typical of leukemia and lymphosarcoma.

The spicule formation might be explained to a

slow lifting of the periosteum due to infiltration of the tumor tissue which might have extended through the cortex from the lymphatics. Another explanation is that given by Greig,[5] "the appearances suggest an invasion of the bone from without, a decalcification by halisteresis or by the removal of the calcium as granules, the setting free of bone cells in a vascularity, insuring a superabundance of pabulum where bone changes have already provided a local excess of calcium."

Frews, as stated by Boyd,[1] concluded that metastases take place along the lymphatic vessels, thus in left suprarenal tumors he found enlargement of the pre-aortic group of lumbar glands with extension: 1. downward along the aorta, the common iliacs and the internal and external iliac arteries; 2. to the gland at the hilum of the liver and then into the substance of the liver along the portal spaces; 3. up through the posterior mediastinum, along the line of the thoracic duct and through the anterior deep cervical glands, along the carotid sheath and to the base of the skull along the internal carotid; 4. along the glands running forward in the intercostal spaces. The proptosis comes most likely from involvement of the sphenoid ridge and the posterior wall of the orbit. (Leinfelder.[12a])

On the right side the lymphatics run into the right lymphatic trunk without establishing any extensive connection with the lumbar glands. The glands that may be implicated are those on the upper surface of the liver, the anterior mediastinal glands on the right side, the glands at the root of both lungs, and the anterior deep cervical glands on the right side. The surface of the liver will be extensively involved.

While Frews' explanations sound very plausible, practically these metastases have not always occurred as he stated. (Scott, Oliver and Oliver,[18] Geshickter and Lewis,[13] Lewis.[14])

The pathological diagnosis of neuroblastoma if only a biopsy is available and no post mortem obtained is rather difficult. If characteristic "rosettes" are found the diagnosis can be made with certainty. The absence of "rosettes," however, does not rule out the condition as in the forty cases studied by the Geschickter and Lewis[13] only one-third showed "rosettes" and, to quote Ewing,[4] "the metastases are usually of round cell highly undifferential with a considerable Since the characteristic finding is a small round cell highly undifferential with a considerable amount of fibrillar material the condition is often confused with Ewing's and other highly undifferentiated neoplasms. It is for this reason that the bone changes are so significant although Colville and Willis[3] report a case that had the Roentgen Ray findings of a Ewing's, whose biopsy was that of a small round cell yet post morten revealed the primary to be in the suprarenal. This case led them to believe that the diagnosis of Ewing's endothelioma of bone should not be absolutely made until the complete post mortem has been done.

Therapy—Surgery offers little help. Lehman in 1917 reported a case in which operation had been performed in 1916. The tumor was removed and the patient was reported well in 1931. (Geschickter and Lewis.[13]) No other cases have survived.

Randall[16] has recently reported a case which received preoperative irradiation and was well ten months after surgery.

Case 1 demonstrates how sensitive the lesions are to Roentgen ray therapy although the prognosis was unaltered.

Differential Diagnosis—Hematopoietic disturbances such as chloroma and leukemia have to be considered. The examination of the blood smear, however, should rule these out.

The perpendicular striations of the skull might make one think of a meningioma but examination of the remainder of the skeletal system would rule this out as meningioma are limited to the skull.

The so-called Wilm's tumor of the kidney will also present an abdominal mass but their chief point of metastases is to the lungs as well as locally and when they do metastasize to the skeletal system, which is late in the disease, the lesions appear to be only destructive and are well localized, somewhat like other metastastatic malignancies. Microscopically, fibrils are not found in tumors of the kidney. (Mixter[15])

Myeloblastoma (aleukemic myelosis) might give such skeletal changes but themyeloblast can be recognized on sections. (Rypins.[17])

CONCLUSIONS

1. Neuroblastoma when it metastasizes to the skeletal system gives Roentgen ray findings char-

acterized principally by perpendicular calcium striations or "whiskers."

2. Given a young patient with proptosis, hydrocephalus, secondary anemia and widespread changes in skeletal system, particularly "whiskers" a definite diagnosis of neuroblastoma should be made.

3. Neuroblastoma are sensitive to irradiation if treated while the patient is still in relatively good condition.

The microscopic sections were reviewed by Dr. E. P. Warner of the Department of Pathology, University of Iowa, to whom I wish to acknowledge my thanks.

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DISCUSSION

Dr. Cesare Gianturco, Urbana: I believe that Dr. Rypins should be commended for bringing to our attention the peculiar syndrome caused by these rare tumors.

It is most interesting that these tumors of the suprarenal gland should metastasize in such a characteristic way; in the so-called Hutchinson type most metastases occur in the skeleton and especially in the sphenoid bone where they produce prominence of the eyeballs. In the so-called Pepper type the metastases occur in liver, spleen, and in the lymph glands of the abdomen and mediastinum. Several explanations have been advanced in order to explain why these tumors seem to prefer one or the other metastatic distributions but no theory can be considered as satisfactory; up to the present time, at least, we must be contended with the observation of a neoplasm which sometimes metastasizes to certain bones, sometimes to certain viscera, very seldom to both.

I cannot quite agree with Dr. Rypins' statement that a syndrome such as he described should make the roentgenologist establish a definite diagnosis of neuroblastoma. Neuroblastoma is a histological diagnosis and although sometimes it is possible to make a histological diagnosis from the roentgenological signs I do not believe that the bony changes observed in the cases of neuroblastoma publishd in literature as well as those just presented by Dr. Rypins are characteristic enough to be pathognomonic of this disease. Some of the changes occurring in the long bones could easily warrant a diagnosis of Ewing's endothelioma, osteongenic sarcoma or even osteomyelitis. The whiskers which should be characteristic of neuroblastoma according to Dr. Rypins, are not always found in this disease, while they are a rather common occurrence in osteogenic sarcomas, meningomas and other tumors of the bone.

I do agree with Dr. Rypins that the presence of multiple bone changes associated with proptosis, anemia, hydrocephalus, and fever should make one consider the possibility of a neuroblastoma. On this assumption one should try to establish the existence of a primary tumor of the adrenals. A flat film of the abdomen might yield precious information as to size and shape of the kidney shadows; if this investigation fails one can obtain an excellent visualization of the suprarenal glands by means of the injection of gas into the peri-renal space; the chest and the gastrointestinal tract should also be examined in a careful way roentgenologically and with other means of diagnosis; a biopsy might be of immense value.

In my opinion it is only after the presence of a primary tumor in the adrenal gland has been ascertained that one can establish in a definite way a diagnosis of neuroblastoma of adrenal origin.

Dr. T. J. Wachowski: I think Dr. Rypins showed three very nice cases of neuroblastoma. I was particularly interested in the response to irradiation therapy as evidenced by the photographs before and after treatment.

We had one case to which we gave 3,000 r rather intensively. It absolutely failed to remove that tumor. It was located in the upper part of the thoracic cage where we could follow it carefully with serial roentgenograms.

I believe I remember seeing so-called whiskers or calcification following periostal elevation in a child with a leukemia. I do not want to be definite, but I am quite certain I saw films of that type, so that gives another condition which would have to be excluded in making positive diagnosis in this condition from a purely roentgenological standpoint. I agree thoroughly with Dr. Gianturco relative to a clinical syndrome. In cases we have seen it was only by correlation of everything that we could make the diagnosis. The cases Dr. Rypins has seen are apparently late. Given a primary tumor in cervical sympathetics, one would be quite unable to make such diagnosis. On the basis of such extensive bone metastases, however, I think the probable diagnosis can be very often suggested.

ROENTGEN THERAPY OF CELLULITIS

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The almost specific action of roentgen rays upon early infections has not been sufficiently emphasized by the radiologists in this country although the foreign literature contains an abundance of references to this valuable aid in the handling of infections. Roentgen rays and the rays given off by radium in its process of decay have, since very shortly after their discovery, been known to have very pronounced effect on living tissues. Only by extensive animal experimentation and observation of the effects of these rays on different types of both normal and pathological tissues have their specific action and therapeutic indications been determined.

Many of the biological reactions were observed in injuries and reactions produced in those who were working and experimenting with roentgen rays in the production of radiographs. As early as 1905 a number of cases of sterilization had been reported among these workers. From this time on roentgen rays were used on almost every type of lesion but it was not until instruments for precise measurement of dosage were perfected that anything like uniform results could be obtained. Likewise it was not until various workers had pooled their experience and results that any kind of prognosis could be made concerning the results that might be expected in the various types of lesions. In order to explain or understand the rationale of any form of treatment the biological action of the agent used and the pathological tissue change produced must be determined as far as possible. The different varieties of body cells are sensitive in varying degrees to the action of roentgen rays and radium. Some are extremely sensitive and others extremely resistant tolerating large doses of radiation. When radiation is applied to a certain type of tissue cell a certain proportion of these cells are destroyed, others are only slightly injured and the remainder may show no injurious effect. Those only slightly injured later undergo complete regeneration or remain alive deprived of one or more functions not necessary to the life of the cell.

According to Desjardins[1] cells may be classified in the order of their degree of sensitivity as follows:

Lymphoid cells—lymphocytes found in the spleen, lymph nodes, blood, bone marrow, thymus and tonsils.

Polymorphonuclear leukocytes found in the blood or tissues.

Epithelial cells found in certain secretory glands, basal epithelium of the testes and ovary, basal epithelium of the skin and mucous membranes, alveolar epithelium of the lungs, bile ducts and liver and epithelium of tubules of the kidneys.

Endothelial cells of blood vessels, pleura and peritoneum.

Connective tissue cells.

Muscle cells.

Bone cells.

Fat cells.

Nerve cells.

The younger and more active the cell the more susceptible it is to the influence of radiation, but the relation of the age of the cell to its relative sensitiveness is less important than the specific vulnerability of the different varieties of cells.

Early in the application of roentgen rays for therapeutic purposes it was felt that the beneficial effects of radiation might be due to a stimulating effect of the radiation, this stimulating action causing an increase in tissue vitality sufficient to successfully combat the pathological process. One reason for the advance of this theory has been that regression of pathological lesions has taken place after exposure to small doses of roentgen rays. This is probably better explained as being due to a high degree of radiosensitivity of the tissue cells involved. Desjardins feels that the theory regarding the stimulating

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effect of radiation has arisen from the attempt to apply to radiation the so-called Arndt-Schulz law according to which small doses stimulate and large doses depress cellular metabolism. Based on pharmacologic grounds this doctrine has not been generally accepted even by pharmacologists. The attempt to apply this law to the action of roentgen rays is unwarranted because the experimental evidence on which it is based is extremely meager and apparently invalid. Experimental work on glandular tissue such as the salivary and gastric glands, also experiments on the effects of radiation on the secretory activity of the kidney show a very transient increase of secretory activity in response to radiation. The phase of increase in glandular function is of such a short duration and so quickly replaced by a decrease in glandular activity below normal that we may feel that any apparent stimulating effect associated with the application of radiation is but the alteration of a normal to an aberrant function due to irritation. Secondary and indirect stimulation may sometimes be observed as the result of a primary degenerative effect on certain cells.

At the present time we believe that the first biological effect of radiation is irritation. This irritation may lead to a temporary transient phase of increased cellular activity. This is followed almost immediately by cellular destruction and depressed function. Continued acceleration of metabolism cannot be produced by radiation. Degenerative changes practically always follow except in extremely resistant tissue where no effect whatever may be observed.

Among the various lesions experimentally treated with radiation infections of all kinds were from time to time included. The body's method of fighting an infection is to rush to the site large numbers of leukocytes which have the power to ingest and digest the invading organisms. The antibodies produced by these cells are entirely endogenous and not exogenous, hence, only those organisms ingested by the cells are effected by them, leaving all other organisms free to grow, reproduce and excrete toxins. No free antibodies are present in the tissues until the leukocytes begin to die and break up as the result of infection, except for small quantities that may be present in the blood and lymph, the result of some previous infection. These, however, are always in small quantities and not sufficient to greatly retard the process of a virulent infection. Only after large numbers of leukocytes have been destroyed does the concentration of antibodies become sufficient to retard the growth, reproduction and excretion of the invading organisms sufficiently that they may be overcome. It is this destruction of leukocytes and liberation of antibodies we seek to cause by irradiation.

Due to the marked susceptibility of leukocytes and particularly lymphocytes as brought out by Warthin[2] degenerative changes are noted as early as 15 minutes after a moderately large exposure to roentgen rays. With a proper regulation of dosage the leukocytes may be the only cells in an area destroyed by irradiation. The rapid destruction of leukocytes by radiation in an infected area frees large quantities of antibodies at the site of infection retarding growth, excretion of toxins and killing invading organisms. The lysins also contained in these cells promote rapid liquefaction and drainage of tissue too badly injured for repair. If treated early, however, such injury does not occur and the tissues quickly return to normal. Only in advanced or long standing cases are incision and drainage necessary and when preceded by irradiation the convalescence should be shortened due to the rapid liquefaction of the injured or necrotic tissue. This is the most logical explanation of the excellent results, rapid improvement and recovery in the series of cellulitis cases that we have treated by irradiation practically without the use of surgery.

As before stated practically all kinds of infections have at one time or another been subjected to various exposures of roentgen rays. Hodges[3] has found that among these certain types respond or are particularly susceptible to irradiation. Particularly furuncles, carbuncles, metastatic parotitis, erysipelas, "Ludwig's" angina or cellulitis of the mouth, face and neck following extraction of teeth or other acute infections usually originating in or about the mouth, show almost specific response to roentgen therapy.

Cellulitis is an acute inflammatory condition due to infection and is especially prone to follow tissue injury. As in most infections there is an attempt by the protective agents of the body to wall off the infection. As a part of this protective function leukocytic infiltration is an important phase. Clinically this is shown by local pain, swelling, discoloration and the systemic re-

action as evidenced by chills, fever and toxicity. In this presentation we will discuss particularly those infections of the face and neck which have their origin in infected teeth or other infections about the mouth but we wish to include several cases in which the acuteness and type of infection was very similar although the infection was not of oral origin.

During the past two years we have treated a series of over 80 cases of infection involving the face and neck, nearly all of which were due or had their origin in infection around the teeth and following extractions of the teeth. These patients when first seen by us presented various degrees of cellulitis some confined to areas only five cm. in diameter while in others the whole side of the face, the floor of the mouth and the soft tissues of the anterior part of the neck down to the clavicle were involved. Most of these patients suffered with dysphagia, many were unable to swallow at all and had a definite degree of dyspnea. It was with difficulty in many patients that the teeth could be separated. Due to the dysphagia and trismus present many of these patients were rapidly becoming dehydrated. Most of the patients were toxic with a temperature ranging from 99.6 to 103 and with a rapidly spreading infection. Each patient was given radiation over the infected area using three-fourths skin erythema dose of a quality that would be largely absorbed in the first five cm. of tissue. A second treatment was administered in 36 to 48 hours of one-half to three-fourths skin erythema dose. Within four to eight hours there was usually an increase in the pain and swelling that lasted four to six hours. This pain was of sufficient intensity to demand the administration of sedatives. After a period of from eight to twelve hours rapid amelioration of symptoms and swelling was observed, the patients being almost free of pain, difficulty of breathing and swallowing within 24 to 36 hours. Following the second treatment the infection rapidly receded with little or no reaction in the skin other than complete temporary epilation. Occasionally slight tanning of the skin may remain over a period of from two to four months. With the exception of two cases resulting fatally, which we will later refer to in the case reports and several cases which required slight drainage, the convalescence in these cases has been rapid and uneventful.

We do not want to leave the impression that all that is necessary in the treatment of massive cellulitis is the application of one or two doses of roentgen rays. The attending physician must play his part or the irradiation will not suffice. The judicious use of heat or cold to the part, proper drainage of the source of infection and cleansing of the mouth are absolute necessities. Due to the rapid destruction of cells in the area there is a definite exacerbation or increase in the amount of edema, inflammation and pain which occurs from four to eight hours after the treatment and continues for about twelve hours. This exacerbation and increase of symptoms is such that some opiate is usually necessary for its alleviation so that the patient may obtain the necessary rest which is always desirable in infections. It is only through close cooperation between the radiologist and the attending physician that the rapid recovery of these patients can be obtained.

The following ten cases were selected to show the effect of roentgen therapy in the various types of lesions discussed in this presentation. They are briefly summarized as a basis of evaluation of this method of treatment of these types of infection. A review of these ten cases affords a cross section through the series treated and illustrate the variation in location of the lesions and the difference in the exciting cause.

CASE REPORTS

Case 1. Miss A. C., aged 24 years. Source of infection, dental. History of onset: November 27, 1934, patient had lower left first molar removed under novocaine anesthesia. This was followed by pain and swelling in the left side of the face. Patient became listless, refused to eat or drink fluids. Present condition —marked edema in left side of face with induration, trismus, foul breath, pain upon palpation, enlargement of submaxillary and sublingual glands, foul discharge from lower left first molar area and difficulty upon swallowing. Temperature 103.2, respiration 36, pulse 99, blood examination: erythrocytes 4,306,000, hemoglobin 89%, leukocytes 16,000.

Diagnosis: Cellulitis following dental infection.

Treatment: December 1, three-fourths skin erythema dose of roentgen rays. December 3, one-half skin erythema dose. Course: Pain was very severe after first radiation treatment lasting eight to ten hours. All symptoms were greatly reduced following the first treatment. Patient was able to swallow liquids and semisolids with considerable comfort. Following the second treatment patient remained at home but not in bed and returned to work the following Monday.

Case 2. Mrs. J. H., aged 40 years, Source of in-

fection, dental. History of onset: Patient had lower left molar extracted under local anesthesia.

Present condition—swelling involving the left side of the face and neck up to level of radiographic base line and extending downward on neck and backward to angle of jaw. Area is tense, indurated, and hot to touch, also swelling to lesser extent involving the right side of the face below angle of jaw.

Treatment: June 8, 60% skin erythema dose and repeated June 10.

Course: Infected area draining into mouth June 12. Definite improvement in 48 hours.

Results—uneventful recovery.

Case 3. Master D. B. aged six years. Source of infection, dental. History of onset: Five days previous to admittance patient had treatment of lower left first premolar tooth. The following day tooth became very painful and left side of face began to swell.

Present condition—massive swelling over left side of face and neck, patient listless, refused to eat or drink. Temperature 101, respiration 32, pulse 91, leukocytes 11,000.

Diagnosis: Cellulitis.

Treatment: Lower left first premolar removed and a quantity of pus evacuated followed by roentgen therapy. The radiation dose repeated in 48 hours.

Course: Necessary to control pain with sedatives first 12 hours.

Result—uneventful recovery.

Case 4. Miss V. K., aged 25 years. Source of infection, dental. History of onset: Three days previous to admittance patient had lower left third molar removed under local anesthesia. Folowing day had marked swelling and pain over the left side of face. Swelling gradually increased and a foul smelling discharge from the lower left third molar area developed.

Present condition—pain on the left side of face, dysphagia, temporary trismus. There was swelling of the left side of the face and in the submaxillary and sublingual regions.

Temperature 103, pulse 130, respiration 30, leukocytes 15,600.

Diagnosis: Cellulitis. Treatment: Roentgen therapy given on day of admittance and dose repeated in 24 hours. This was accompanied by the usual external application of cold and hot oral irrigations.

Course: After first roentgen treatment pain became very severe. Temperature rose to 104. Following the second treatment pain gradually subsided, temperature, pulse and respiration returned to normal within three days and patient could again swallow with comfort and clean her mouth by means of a toothbrush.

Result—uneventful recovery.

Case 5. Miss J. S., aged 30 years. Source of infection: Pustule on right side of face opposite the ala of the nose. History of onset: Patient admitted applying pressure in order to evacuate a small pustule three days previous to examination.

Present condition—patient unable to sleep because of the pain for the past two or three nights. There is present an indurated, edematous area about one-half inch in diameter, which is markedly painful. Temperature 99.6, pulse, 75, respiration 18.

No blood work done.

Diagnosis: Local infection. Treatment: One-half skin erythema dose roentgen rays and dose repeated in 48 hours. Course: Treatment followed by increased pain necessitating sedative. At time of second treatment pain had practically ceased and induration and swelling disappeared.

Result—uneventful recovery.

Case 6. Mr. P. G., aged 43 years. Source of infection: Laceration on the left side of the face just beneath the eye.

History of onset: 48 hours previous to admittance patient received a laceration from the nozzle of a garden hose. There was profuse bleeding. 24 hours after accident patient was seized with a violent chill and temperature of 104.6. Patient became toxic and irrational.

Present condition—on admission there was marked swelling of left cheek over malar area, left eye completely closed, abrasion approximately one-half inch in length over infraorbital ridge. Apparently no discharge was perceptible. Pain was intense. Temperature 99.8, pulse 90, respiration 22, leukocytes 12,300.

Diagnosis: Cellulitis.

Treatment: On evening of admission to hospital patient was given three-fourths skin erythema dose roentgen rays and 36 hours later one-half skin erythema dose. This was accompanied by applications of moist heat.

Course: Six hours following first treatment temperature was 103, patient having considerable pain necessitating a sedative and there was an increase in the pain and swelling. Within eighteen hours, however, temperature had returned to normal with complete relief of pain.

Result—patient discharged as recovered 72 hours following admittance. No incision or drainage necessary.

Case 7. Mr. F. C., aged 36 years. Source of infection, dental. History of onset: Five days previous to admittance pain started in upper left third molar. This was followed by swelling in he region of the parotid gland accompanied by pain and trismus. Present condition—hard indurated swelling in the region of the parotid gland, painful on palpation, dysphagia and general malaise. Temperature 102.3, pulse 101, respiration 31, leukocytes 11,000.

Diagnosis: Parotitis secondary to dental infection.

Treatment: Upper left third molar removed by oral surgeon under nitrous oxide and oxygen anesthesia and roentgen therapy applied over left parotid gland region. Sedatives were given for pain. Roentgen ray treatment repeated in 48 hours.

Course: Severe pain lasting approximately 10 hours, followed by rapid amelioration of symptoms within 24 hours and patient returned to work within a week.

Result—uneventful recovery.

Case 8. Mr. E. T., aged 35 years. Source of infection, unknown. History of onset: Patient had gas-

troenteritis three or four days previous to onset of present illness.

Present condition—marked swelling of the left parotid gland, painful in character and red in color. Duct unobstructed. Trismus and dysphagia. Temperature 99.6, respiration 18, pulse 74, leukocytes 8,700. Diagnosis: Parotitis. Treatment: Roentgen therapy given on day of admittance and repeated in 48 hours.

Course: Treatment followed by moderate reaction followed by rapid decrease in all symptoms.

Result—uneventful recovery.

Case 9. Mrs. E. C., aged 23 years. Source of infection, dental. History of onset: Lower right first molar extracted four days previous to admittance. Following the extraction swelling in side of neck and submaxillary region developed with pain and tenderness to pressure.

Present condition—pain, malaise, headache, chills and fever. Massive induration and swelling over right side of the face and neck including the floor of the mouth. Difficulty in breathing and dysphagia were present.

Diagnosis: Massive cellulitis.

Treatment: Three-fourths skin erythema dose roentgen rays on day of admittance followed in three days by a second treatment of one-half skin erythema dose. Patient was not cooperative and went to another hospital causing delay in treatment.

Course: Local induration and swelling reduced but patient developed a pneumonia which terminated fatally seven days following the extraction of the tooth.

Anatomical diagnosis of cause of death—Ludwig's angina, diffuse cellulitis, suppuration with abscess formation and gangrene in soft tissues of neck, generalized lymphadenitis, pharyngitis, bronchitis, pneumonia of right and left lungs.

Case 10. Miss D., aged 17 years. Source of infection, tonsil. History of onset: Peritonsillar abscess starting two weeks previous to admittance.

Present condition—cellulitis involving right parotid and submaxillary region and extending to the right eye, duration four days. Temperature 101 on admission but increased to 104.6 within 24 hours. Leukocytes 25,450. There was evidence of bronchial infection in the lower left lung and patient was extremely toxic and in moribund condition.

Diagnosis: Massive cellulitis, pneumonia. Treatment: One dose roentgen therapy.

Result—patient expired 24 hours after treatment with no apparent response.

The last two cases which terminated fatally were included mainly to show the serious possibilities of these infections. Both cases had too long delayed and insufficient treatment.

Summary: We have presented a cross section of the results of roentgen therapy in a series of eighty cases of cellulitis. The ten case histories discussed in detail represent an average of the entire series. The results were almost specific in all but two cases as above cited. In these two of unfavorable termination the method of treatment was not given a fair chance. One because of lack of cooperation on the part of the patient, the other because the patient was practically in extremis before starting therapy. These two cases are discussed however because they show the potentially serious outcome of these types of infection.

Five of these cases developed a cellulitis following the extraction of a tooth under local anesthesia. Two cases developed a parotitis as an extension of infection. One of these was associated with infection around the upper left third molar, the second was a simple inflammatory reaction involving the parotid gland apparently without infection associated with the teeth. One case developed a cellulitis involving the floor of the mouth and submaxillary region secondary to infection in a lower first premolar tooth. This infection developed in connection with the treatment of the tooth; no extraction was done in this case. One case of infection associated with a simple papule or pustule at the side of the nose, there being no association here with dental infection. One case developed localized infection following an abrasion over the cheek in the malar region.

The cases discussed were mostly those of cellulitis complicating oral infection. However, roentgen therapy can be used in treatment of cellulitis in other locations with equally good results. For instance, we treated in this series, cellulitis of the foot, cellulitis following mastoidectomy and following skin abrasions. Also the case of a five year old girl who had surgical incision and drainage of abscess in the neck followed a few days later by area of infection in foot. Temperature was 105.4. Bone structure negative as shown by roentgenogram. Roentgen therapy was administered with complete relief from pain and decrease in swelling in 24 hours and normal temperature within 48 hours. Complete uneventful recovery followed in a few days. The results of roentgen therapy were found to be uniform in the various types and locations of infection.

CONCLUSIONS

1. Roentgen therapy is the rational treatment of infections involving the soft tissues of the mouth, face and neck.

2. Surgery is unnecessary or contraindicated in most such infections.

3. Results are rapid and with few exceptions excellent.

4. Treatment is painless and when properly supervised does no harm and leaves no scars.

5. With rare exceptions no subsequent dressings or treatments are necessary.

6. The earlier in the course of the infection the roentgen therapy can be started the better the results.

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DISCUSSION

Dr. I. S. Trostler: I agree entirely with the essayists in regard to practically everything they have said. Such disagreement as I have will be mainly variations in technique. It has been my experience we do not have as much complaint after treatment as the essayists mentioned. That may be due to my applying less. I am in the habit of applying a fourth to two-fifths of a dose at the time of the first treatment. The difference in the amount of x-ray applied probably produces that variation in swelling due to breakdown of the cells and in that way perhaps an increase in the amount of pain from pressure.

In all acute infections, particularly cellulitis, we have found that radiation applied after the manner of the essayists gives relief, promptly, efficiently and is in my opinion preferable to anything we have. Of course, we have to use the clinical measures, heat, cold, elimination and all the other medicinal things. X-ray alone probably would not produce those effects.

I have in mind three cases I would like to discuss briefly. The first is a very common type wherein an attorney of forty-five foolishly pulled out some hairs from his nostrils. In a few days he had a cellulitis in the nostrils, lips and lower part of one cheek. He was sent to me by a general practitioner for whom I had treated a carbuncle a few weeks before, and who liked the results so well he thought this case would be amenable to x-ray. He received two-fifths of a dose, 160 r, repeated the next day and reported completely relieved from pain in twenty hours. Great reduction in swelling in thirty-six hours and almost complete disappearance of the swelling in forty-eight hours.

The next case is especially interesting, a case of recurrent lymphedema due to periodic recurrent streptococcus infection of the lower half of one leg. This man had an epidermophytosis (so-called athlete's foot) for nearly fifteen years and had all kinds of lotions, salves, pastes and everything you could think of prescribed by numerous physicians, counter-prescribing pharmacists and wiseacre friends. The recurrent lymphedema began about five years before. Each attack came at shorter intervals and was ushered in by a chill followed by fever and swelling, temperature up to 104 degrees and intense pain. Each attack left the leg with an increased amount of edema. When he came to me one leg was three and three-quarters inches larger in circumference at the principal swollen level. It was between attacks and it had the resistance of the scleroderma we see in children once in a while, showing marked pitting which remained for more than half an hour. He had been having these attacks of lymphedema about every three or four weeks.

He was a big husky fellow, thirty-seven years of age, who because of this ailment had become morose and ready to do almost anything, when the surgeon sent him to me. At that time the leg was of a dull bluish color and quite sensitive to touch. Up to this time the man has received seven applications at weekly intervals and six at bi-weekly intervals. He is still under treatment. The size of the leg has been greatly reduced. It is now but little larger than the other leg. I expect to give him treatment about once a month for three or four months and later once every six weeks, and keep him under observation for about a year. He has had no recurrence of the lymphedema for over five months, the longest period of relief he has had for five years.

The last case I want to refer to is as a caution to the roentgenologists more than a clinical case although it comes in the same clinical group as those Dr. Cushway presented. An eye, ear, nose and throat specialist —who should have known better—pulled a hair out of his nostril and developed a cellulitis of the nose, upper lip and cheek. After a few days of hot applications he went to a leading otolaryngologist. (I include all this because this patient is an eye, ear, nose and throat man). He went to the otolaryngologist who sent him to a radiologist to whom he had been sending his work. Not finding the radiologist in he came to me and I applied 100 r, suggesting that he telephone or come to see me the next day. On the second day after that he called me up in the morning about ten o'clock, told me how much better he felt and that he was going to see his attending physician, after which they would decide whether he needed more x-ray treatment.

In order to have the best and most advantageous results I called up the man who was taking care of him. He was not in but I left word for him to call me when he came in. He did not call me but another radiologist —the man to whom he had been sent—called me and asked how much x-ray I had given this patient. He had terror in his voice when he asked the question and when I told him I had given only 100 r I could hear him heave a deep sigh of relief. He said, "He came to my office yesterday morning and I gave him 200 r. He did not tell me he had had any x-ray before." I told him to use his own judgment but I would advise not giving him any more and to send him to me as I wanted to tell him what I thought.

The man who had given him treatment the second day had no idea he had any x-ray, and you can understand what chances he had taken on producing overdosage. We should *always* and *invariably* ask every patient, "Have you had any x-ray treatment before?" No therapy should be applied without asking that question.

I want to compliment the essayists on presenting this paper—which is the type of paper we should read in our section—the type of paper which should be published in the ILLINOIS MEDICAL JOURNAL, so that the general practitioners and the other specialists will know what we are doing and what we are able to do.

Dr. P. G. Papsdorf: Mr. Chairman and Dr. Cushway: I am glad to be here because it gives me an opportunity to attest to some of the things Dr. Cushway has done for me relative to saving the lives of my patients. He has not only helped to save some of my patient's lives, but he also saved my own life. As I happen to be one of the individuals whose cases he cited.

This paper is really worth while repeating in the Sections of Medicine and Surgery, because, after all, that is where it is needed most. We have to attempt to convince the surgeon and general practitioner of the value of x-ray therapy in the treatment of cellulitis of the face and neck. It is strictly, as the essayist said, a physician's problem in spite of the fact that most of these cases are of dental origin, and we know the minute the dentist gets into a little trouble after having injected novocain into the soft tissues of the oral cavity, he throws up his hands, and does not know what to do. If the physician does not know how to handle these cases it is too bad for our patient.

Up to about two years ago, we used to attempt to establish drainage in this type of case, and every once in a while it became our painful duty to sign a death certificate. Since that time fortunately in a series of over eighty cases, we have had only one death. So I am quite enthusiastic about the treatment of cellulitis of the face and neck by x-ray.

I am glad the essayist mentioned the fact that the x-ray must not be looked upon as a panacea for the treatment of cellulitis of the face and neck. We need the strict cooperation of the attending physician. He must know how to treat these cases. They must have systemic treatment, must have supportive treatment. If they have pain, it must be taken care of by means of hypnotics. The question of hot or cold application occurs a good many times. At first we used the application of heat; hot epsom salt or boric acid applications. Later we found several little pockets developing along the facial area and had to open them, so we decided to discontinue the extra-oral application of heat and apply ice extra-orally, and heat intra-orally.

In giving instructions to the nurses, we have to be very careful in telling them just what we mean by heat intra-orally, which means aproximately every ten or fifteen minutes during the waking hours of the patient. The oral cavity must be irrigated with hot saline solution or any solution one desires as long as it is hot. In that way oftentimes we get a spontaneous eruption of the pus area intra-orally, which, of course, helps us a great deal. The minute we have a spontaneous eruption of this pus area intra-orally, the patient is going to get relief.

I wish to compliment the essayist on the presentation of this paper.

Dr. H. A. Olin, Chicago: I think Dr. Cushway is to be complimented upon this timely paper. Within the past year there appeared in the ILLINOIS MEDICAL JOURNAL a paper on the surgical treatment of cellulitis about the face and neck. On reading that paper one would gain the impression that surgery was the treatment of choice. I think there is a prevailing opinion among all practitioners that the treatment of cellulitis about the face and neck is surgical, and that is the reason I feel this paper is very timely.

I believe Dr. Cushway perhaps did not emphasize the fact that palliative measures like x-ray therapy are the treatment of choice and surgery should only be instituted where there is localization of the pus or where there happens to be rupture of the suppuration, in the mouth, cheek or face. Dr. Nichols, of Harvard, emphasized to me some years ago, as a student, the extreme seriousness and the high mortality of infections about the nose, face and mouth and the necessity for doing minimum surgery, and emphasized the necessity for palliative measures. I think he would appreciate this type of therapy.

As a student in radiology, I am impressed with the necessity of using x-ray therapy about the face, nose and mouth, and especially carbuncles, never to institute surgery, and always to use therapy and in sufficient doses.

A case I had within two years was that of a man with a very large carbuncle of the back of the neck, with the swelling so great it pushed the ear forward. He had walked the floor for ten days with extreme pain, high temperature, and was very restless. He was given 500 r in the course of seventy-two hours with amelioration of symptoms. The fever subsided and no surgery was attempted. That man recovered completely with practically no scars. That is why we should all compliment Dr. Cushway on his very timely paper.

Dr. Cushway (Closing the discussion): In regard to Dr. Trostler's very timely remarks as to dosage, I would like to say our cases of cellulitis of the face and neck were mostly advanced cases, many of which were true Ludwig's angina. In these severe cases we find the results are better with the higher dosage. In other types of less severe cellulitis the dose should be smaller. A dose not to exceed 100 "r" would probably give best results in these cases. In the infections about the nose and upper lip we feel that the larger dose of between 180 "r" to 200 "r" is indicated because of the potential serious possibilities of infections in this location.

As to Dr. Olin's remarks as to radiation being the treatment of choice in cellulitis, I believe our results in the treatment of Ludwig's angina and cellulitis of the face and neck prove that radiation treatment is a specific in these infections. I think radiation treatment should be used in preference to any other form of therapy.

I wish to thank the discussors for their discussion and for the interest shown in this subject. My idea in presenting this paper was to bring into greater prominence the use of roentgen therapy in the treatment of infection. I think roentgen therapy in the treatment of benign lesions and particularly in the treatment of infection has not been given sufficient attention in the literature in this country.

INTRAPELVIC PROTRUSION OF THE ACETABULUM OR OTTO'S PELVIS

LAWRENCE M. HILT, M. D.

SPRINGFIELD, ILL.

It is our belief that intrapelvic protrusion of the acetabulum exists to a more common degree than is generally appreciated. Articles relating to this type of lesion are chiefly in German, and as far as can be learned there are about 80 reported cases to date. There exists considerable difference of opinion as to the correct terminology of this lesion, as well as its etiology. Our interest is chiefly due to one of the cases to be reported. Three case reports represent our contributions to the subject.

Concerning the terminology there has been a multiplicity of terms suggested since Otto's original description in 1824 from a museum specimen. It is interesting to note the article in *Bone and Joint Surgery* which follows Pomeranz's rather exhaustive study is entitled Arthrokatadysis, in which a report of two cases is made. It is evident that they are one and the same type as those presented by Pomeranz.

Some authors prefer to call this condition osteoarthritis deformans, destructive coxitis, osteoarthritis protrusion of the acetabulum and intrapelvic protrusion of the acetabulum. It is our opinion that this last named term is the most descriptive and should be universally used.

Confusion exists as to the correct etiology, many workers insisting on the determination of a definite causative factor. There does appear to be the rather definite opinion that the lesion is non-traumatic in character. As Pomeranz suggests, "We are not dealing with a disease entity but with the end result of an inflammatory process." Of the infectious agents which play a role in this lesion, the gonococcus has been assumed by many to be a causative factor. Tuberculosis is also mentioned. Some believe that tabes must be considered.

The radiographic description is as follows: The head of the femur appears slightly flattened or intact. The margins of the head can be well outlined. The femur appears to be displaced inward and slightly upward. There may appear to be some bony anklyosis between the femur and lower margin of the acetabulum. The greater trochanter may appear to be in contact with the upper margin of the acetabulum. There is thickening of the inner margin of the acetabulum. This may be slight or marked, as illustrated by our cases. In one of these cases there are several punched out areas of decreased density in the head of the femur. This we do not attribute to the presence of malignancy.

The case in our series which showed the least amount of bony involvement gave the severest symptoms.

The first case is of exceptional interest, due to the fact that this man was treated for a fractured pelvis for two months. The history is as follows:

A white male, aged 64, was injured by a falling object while at work. He was in the hospital from the date of injury in March until the following May, when he returned to his home. He returned to work November 1 of the same year and has been working since.

Present Complaint: Patient complains of pain in right side of chest and over sacroiliac joint. He states that he sleeps fairly well, that his bowels are regular, that he has to urinate two or three times at night and more often than normal during the day.

Physical Examination: He walks with a decided limp, due to a deformity of right hip joint. There is a marked muscle spasm in lumbar muscles and limitation of motion in back and right hip. Heart sounds normal. Blood count is within normal limits. Urine is negative except for a few hyaline casts which may be termed normal for a man of his age. Blood pressure is systolic 160 diastolic 100.

X-Ray Examinations: Shows advanced osteoarthritis of spine and other joints with an intrapelvic protrusion of the right acetabulum.

Remarks: This patient stated he did not limp before the accident, but, according to acquaintances, he did limp. Since the accident he uses a cane when walking but is able to do his work.

The second case is a male aged 60 who has always been in good health. No veneral history. No history of pain in hip, limping or other than normal gait. Slipped and fell on ice in January, 1936. X-ray reveals in addition to an intrapelvic protrusion of the acetabulum, a fracture of the junction of the inferior ramus of the pubic with the ischium. Since that time he has considerable pain in this hip and some difficulty in walking. It is our experience to have seen cases of this type of pelvic injury who have very little pain or discomfort following the trauma.

The third case gives a history of an injury, December 28, 1935, at which time she slipped and fell on the ice. Before this time she had no difficulty in walking. After the injury she required the aid of crutches. X-ray examination, on January 7, 1936, revealed a lesion of the pelvis which was diagnosed as an intrapelvic protrusion of the acetabulum more marked on

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the right than left but of sufficient extent to be termed bilateral.

The patient did not remain in the hospital and a follow up history has not been obtainable.

It is our comment that this condition may exist without the patient's knowledge and produce no disability. After trauma, the lesion may become active and cause pain and disability. It would seem that the first patient, case 1, who was a compensation case, did have increased pain after his accident and that trauma was a factor in the increased pain. It is important that the lesion be correctly interpreted, and this duty will fall to a large extent on the roentgenologist.

A fracture of the acetabulum will not present the well marked thickening. In cases of doubt stereoscopic examinations may be of value.

I am indebted to Doctor Allen and Doctor Zoller of Litchfield for two of the cases presented.

St. Johns Hospital.

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DISCUSSION

Dr. C. H. Zoller, Litchfield: We agree with Dr. Hilt that intrapelvic protrusion of the acetabulum is the preferable terminology for this condition, as it is our belief that the condition has its origin in early life and does not develop after the age of twenty. As to the etiology, it is our belief that the protrusion is caused by either a congenital deepening of the acetabulum or a delay in the ossification of the three bones forming the os innominata, the head gradually pushing the floor of the acetabulum into the pelvis. As it develops so slowly, the patient is ignorant of the condition, and it is easy to see that such an abnormal joint should frequently become the seat of an arthritic process or an infection. All of the cases that I have seen have been in middle life or beyond, and were associated with osteoarthritis.

We do not believe that this intrapelvic protrusion of the acetabulum is an end result of infection of the hip joint but that the protrusion antedates the infection, if present.

Dr. Doub of Detroit has had eight cases, ranging in age from sixteen to fifty-eight years, under his care and nothing in their histories could be found to connect any infectious disease with this condition.

In the last thirty years I have seen a number of cases and had occasion to examine two in the last year. One of the cases you just heard described. The other was a white male 68 years of age, who was injured while at work in a mine by being struck over the crest of the right ilium by a piece of coal. A radiograph of the pelvis showed an intrapelvic protrusion with osteoarthritis of the spine and right hip. An x-ray made nine months later showed no apparent change in the condition, although he was still complaining of pain in the right hip.

The history that he gave at the time he entered was that he had never been sick until four or five years ago when he had rheumatism in the right hip and was unable to work for one month. Two years ago he was unable to work for several months because of pain in the hip. He had been working for six weeks when injured.

It is our belief that these men had an intrapelvic protrusion which began to give them pain when they developed their osteoarthritis.

Dr. F. Flinn, Decatur: As Dr. Hilt has pointed out to you, the report of these cases in the literature is very scarce, probably due to our lack of interest or oversight. I do not remember that I have seen a single case of as advanced lesions in the past ten years, as he showed there. I have had several where the appearance was very similar to the last case, where the acetabulum was thinned out but the protrusion was not particularly noticeable. Apparently the walls of the acetabular fossa have approached each other and from the history of the cases shown it appears to me to be a deficiency disease in which the bony structures have become soft and the walls approach each other. It may occur bilaterally or unilaterally. The youngest case which I remember reported in the literature was that of a sixteen year old. I have never seen one that young myself.

Dr. Hilt (closing the discussion): I desire to thank my discussors particularly Dr. Zoller for stimulating interest in this condition. We had an additional case with carcinoma of the stomach we did not include; because the films were not of good technical quality and not centered over the particular area.

However, this man did have a history of being disabled for quite some time, several years prior to his gastro-intestinal study. He died within a few months with carcinoma of the stomach.

THE ELLIOTT MACHINE IN THE TREATMENT OF PROSTATITIS

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The value of the application of heat in the treatment of many human ailments is well known. As far back as 450 B. C. Hippocrates advocated warm vaginal douches for the relief of pelvic pain, and this treatment was rediscovered by Galen and Celsus about 500 A. D. During the seventeenth century German physicians poured hot lead shot into the vagina for prolonged heat. Early in the eighteenth century intrauterine douches were advocated, but were soon condemned by Emmett, who again advised intravaginal irrigations.

For the amelioration of prostatic symptoms

and infections many mechanical, electrical, and diathermic devices have been advocated and used in the past. The majority of them were either applied externally in the region of the prostatic zone or directly to the prostrate by way of the rectum. Hydrotherapy, in the forms of hot sitz baths, hot rectal irrigations and injections has served many useful purposes in the treatment of prostatic disease.

The principal of using a distensile rubber bag with circulating hot water within the vagina was first advocated by Dr. Charles Robert Elliott in 1928-29 and reported by Holden and Gurnee[1]

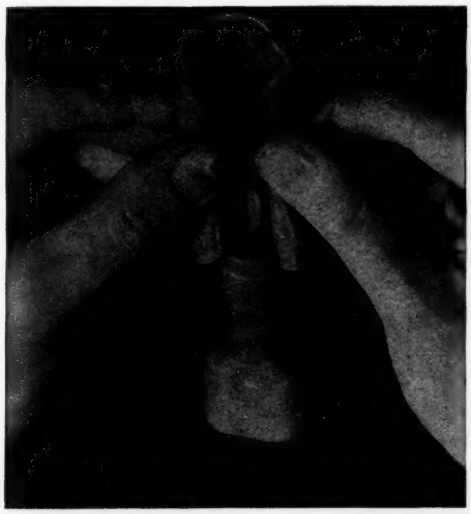

Fig. 1. Showing technic of rolling the Elliott bag before rectal insertion with the "suction on."

in 1931. Since that time many favorable publications have found their way into the medical literature, notably by Graham,[2] Counseller,[3] Mussey,[4] Preece,[5] Black,[6] Revell,[7] Doan and Simpson,[8] and others. Most writers have been favorably impressed with the results of acute and chronic infections of the female pelvis. For anatomical reasons, the distensible bag seems more adaptable to the vagina than rigid diathermy electrodes and perhaps less dangerous (Holden and Gurnee) Herring[9] is the only dissenter among this group of writers and he still favors diathermy treatments. Four vaginal burns with the Elliott bag were reported by Cosgrove and Waters.[10] In 1932, Michel and Traube[11] first suggested the use of the Elliott bag in the treatment of prostato-vesiculitis and prostatic abscess.

Because such good results were obtained in female pelvic infections it was felt that this method merited a trial in the treatment of prostatic disorders. Through the cooperation of the Treatment Regulator Corporation, many different sized bags were devised and used in this series of eighty-two cases. A distensible rubber bag inserted into the rectum and attached to the Elliott machine was the treatment used in these cases. Sixty-seven were clinic and fifteen were private patients. The majority of the former were chronic infections, while the latter were acute.

The clinic patients comprised a group of cases which had been coming to the clinic for a period of one to five years. Their treatments had consisted of massages, sounds, instillations, and other routine measures. Cases were not selected, but for convenience were divided into seven groups:

Group 1. Chronic prostatovesiculitis, nineteen cases. In this group the cell count ranged from 15 to 200 pus cells or more per high power field, with the usual symptoms of frequency, nocturna, dysuria, urgency, and in some cases pain in perineum or back, with or without a cloudy urine.

Group 2. Chronic prostato vesiculitis with multiple arthritis, sixteen cases. In these patients a diagnosis of chronic infectious arthritis had been made by the orthopedic department. All showed pus in the prostatic fluid, except one.

Group 3. Chronic prostatovesiculitis with contracture of vesical neck, four cases. These patients presented clinical findings of prostatic infection and obstruction without prostatic enlargement. The diagnosis was confirmed by cystoscopy.

Group 4. Adenoma of the prostate with infection, nine cases. These patients presented symptoms of prostatism with definite palpable prostatic enlargement and pus in the prostatic fluid. Cystoscopic examinations confirmed the diagnosis of prostatic hypertrophy.

Group 5. Post-resection, eight cases. These patients had recently been resected transureth-

rally, with signs and symptoms of residual infection and pyuria.

Group 6. Acute gonorrheal prostatovesiculitis, eighteeen cases. In this group the infection had been present for two weeks to four months. All the signs and symptoms of an anteroposterior urethral infection with a positive smear were present. The prostates showed enlargement and tenderness, while three cases

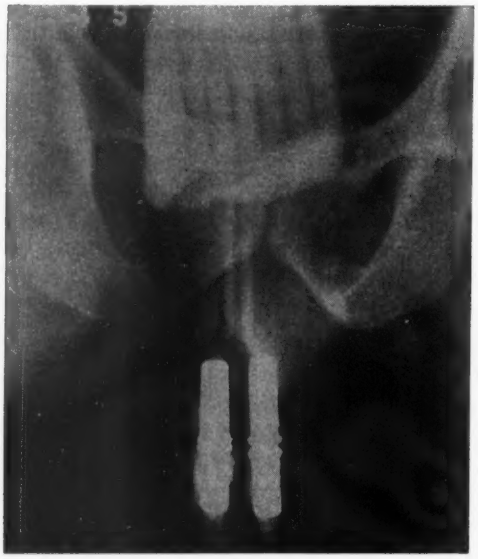

Fig. 2. Elliott bag in proper place during treatment.

gave evidencec of marked periprostatitis and periseminal vesiculitis.

Group 7. Miscellaneous group, six cases. Acute non-specific prostatovesiculitis, two; acute non-specific epididymitis, one; acute urethrocystitis in a female due to the B. Flexner, one, and chronic posterior urethritis, two.

Technic. A total of 1459 treatments were given to these 82 patients, averaging about 18 treatments per patient. The actual number given to each patient varied between three and 28. As far as possible daily treatments were given to clinic patients while one-half of the private patients took only two to three treatments per week. Patients were instructed to come in with an empty rectum on the day of their treatments. Treatments were given with patients lying on their backs and with thighs flexed. To insert the bag, the motor of the machine was started, the suction turned on, and the bag rolled as illustrated in Figure 1. The external sphincter was well greased with vaseline, the bag carefully inserted, and the pressure increased from two and one-half to three pounds (Fig. 2). When difficulty was encountered in inserting the bag, both thighs were sharply flexed upon the abdomen. During the initial treatment same patients complained of rectal fulness and distress. When the bag is improperly placed and there is impingement upon the internal sphincter, considerable rectal spasm may be produced (Fig. 3). The first treatment was continued for thirty minutes, with subsequent visits of forty-five minutes to one hour which were usually well tolerated. Three patients refused to continue treatment because of rectal spasms. In two others the rectal symptoms were controlled with one per cent nupercaine ointment. No other patients objected to the treatment. Nine,

Fig. 3. Showing Elliott bag improperly placed. Note impingement upon the internal sphincter.

or 10% did not complete the treatments and their results could not be definitely evaluated.

The temperature of the water in the machine was varied between 110 and 130 degrees Fahrenheit. It was found that temperatures could be increased during each and subsequent treatments, but the temperature was never elevated above 130° F. A few patients were unable to tolerate a temperature above 125° F. A thermometer inserted into the rectum beside the bag

usually reads ten to twelve degrees lower than the machine temperature. No accidents have occurred. The bags were frequently distended before insertion to determine their worthiness. Upon completion of the treatment, suction was again applied and the bag carefully withdrawn. Hemorrhoids may be aggravated during the course of treatments. Proctoscopic examination in five patients, immediately following the Elliott treatments, revealed an excess of mucus and an intense hyperemia of the rectal mucosa. Submucous hemorrhages were not observed.

In the interpretation of the results obtained by this method, we have chosen to be conservative. Patients with symptoms and findings of an infection which resolved completely during the treatments were classified as asymptomatic. Those patients having a high grade prostatitis or marked vesical symptoms which practically resolved during the treatments, were classified as showing marked improvement. For example, with patients of Group 1, when the arthritic pains were relieved and the prostatic infection cleared according to the cell count, but the patient still complaining of some residual stiffness or weakness of the joints, these were classified as showing marked improvement. When symptoms of vesical irritability and prostatic infection were definitely improved but a low-grade residual infection of the prostate remained, they were placed in the moderately improved column. Where some improvement was noted which seemed better than by the usual routine method, they were classified as slightly improved. Nine patients left the clinic (three on account of tenesmus) before the course of treatments were completed, and were classified as unimproved.

The results obtained in Group 1, nineteen patients, ages between 23 and 67 years, were as follows: Three became asymptomatic, one showed marked improvement, three moderate, and seven slight improvement. Five revealed no improvement, and five left the clinic before any change in their condition was noted. In Group 2, sixteen cases with arthritis, one became asymptomatic, six showed marked improvement, four moderate improvement, and five practically no improvement. In other words, eleven out of sixteen patients (or 73%) received moderate to marked benefit from these treatments. Seven patients were relieved of their acute pain, and two, who were almost totally incapacitated before beginning treatment, were entirely relieved. Six still had some residual stiffness of the joints. Four received no relief whatsoever. One was treated at the request of the Orthopedic Department without relief, in spite of the normal prostatic fluid. The cases in Groups 3 and 4 were surgical adenomas and contractures. It was noted that eleven patients obtained some amelioration of their symptoms, and two were un-

	No. Cases	No. discontinuing treatments	Asymptomatic	Marked improvement	Moderate improvement	Slight improvement	No improvement	Rectal spasms
Group 1								
Chronic prostato-vesiculitis	19	5	3	1	3	7	5	1
Group 2								
Chronic prostatitis with arthritis	16	1	1	6	4	1	4	1
Group 3								
Chronic prostatitis with contracture of bladder neck	4	1	..	1	2	1	..	..
Group 4								
Adenoma with infection	10	1	..	3	5	..	2	..
Group 5								
Post-resection cases	9	1	..	3	3	2	..	..
Group 6								
Acute gonorrheal prostato-vesiculitis	18	..	10	2	3	..	3	1
Group 7								
Miscellaneous	6	..	2	2	1	..	1	..
Acute nonspecific prostatitis	2	..	..	..	..	..	..	..
Acute cystititis—female	1	..	..	..	..	..	..	..
Acute epididymitis	1	..	..	..	..	..	..	..
Chronic post. urethritis	2	..	..	..	..	..	..	..
Total	82	9 (10%)	16 (22%)	18 (25%)	21 (30%)	12 (16.5%)	15 (20.7%)	3

improved (one had a vesical calculus). All but two of these improved cases returned within three months with some recurrence of their symptoms of frequency, urgency and nocturia. Group 5 consisted of nine resected prostatics who had residual symptoms of infection and retention. Three showed marked improvement, three moderate, and three only slight improvement. Of the last three, one had a contracted bladder, one was a cardiac, and in the other insufficient tissue had been removed. All patients showed some reduction in the prostatic cell count, and in five the urine became clearer, but none became asymptomatic. In the acute anteroposterior gonorrheal infections (Group 6) the results seemed to be the best. Ten out of eighteen patients (59%) became asymptomatic. Nine of this group were private patients who had, in addition, local treatments as seemed warranted. Two of these had prostatic abscesses which ruptured intraurethrally. In three, the infection was present for two, four and twelve weeks respectively and had been treated elsewhere with intradermal injections. In these patients findings of marked peri-prostatisis and peri-seminal vesiculitis were noted. These nine private patients received an average of eleven treatments (two times a week to daily). Eight have been followed for at least three months, and in these there has been no recurrence. In the miscellaneous group (Group 7), two cases of acute non-specific prostatitis cleared quickly on three and four treatments each. Both patients have remained well for four months. One case of urethro-cysto-pyelonephritis in a three months' pregnant woman, received marked benefit. After seven vaginal treatments, she became asymptomatic and discontinued treatments. One case of acute epididymitis improved a great deal with seven consecutive treatments, by applying a specially constructed bag to the scrotum.

Summary. Of the 72 patients who were treated and followed, sixteen (22%) became asymptomatic; eighteen (25%) showed marked improvement, while twenty-one (30%) gave evidence of moderate improvement; twelve (16.5%) showed slight improvement, while fifteen (21%) seemingly derived no benefit from the treatments. After 30 to 90 days there were some recurrences, particularly in Groups 3 and 4. Where the prostatic fluid was scanty in the beginning, there was a definite increase in the amount after the third treatment. No consistent rise in the white blood count was noted. There was beginning remission of symptoms after three to five treatments. The local hyperemia produced by the heat causes a physiological increase in blood supply and a probable increase in prostatic secretion. Experimental studies are now being carried out to support this clinical observation.

We believe that this method of treating infected prostates is equal to the fever therapy (hyperpyrexia) now in vogue without its inherent dangers. An insufficient number of cases have been treated to merit conclusive opinions. Recently Lewis[12] reported favorably on the treatment of prostatitis by local heat.

CONCLUSIONS

1. The Elliott treatments are particularly adaptable to acute infections of the prostate, especially where local therapy is contraindicated.
2. Arthritic pains due to a prostato-vesicular focus can be relieved in the majority of cases and the original focus improved.
3. Urinary infections with symptoms due to an enlarged prostate may be improved preoperatively and resolution aided in post-resection cases.
4. Daily treatments, if possible, of thirty, forty-five and sixty minutes, are preferable.
5. This method of treating infected prostates is practical and reasonably safe.
6. The Elliott machine is reliable and very simple to operate.

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Appreciation is extended to Cyril Vance for his assistance in the study of this problem.

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USE OF OBTURATOR IN TREATMENT OF CHRONIC ANTRUM INFECTIONS

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In the surgical treatment of chronic infection of the antrum or maxillary sinus, the radical Caldwell-Luc or one of its many modifications, is supposed to be the last word. Even after these radical antral-nasal operations, we still have with us the patient with the chronic antrum, complaining not particularly of any pain in the antrum, but with the constant postnasal dropping and also the postnasal, tracheal and sometimes bronchial disturbances, which are generally constant following any chronic sinus infection.

The reason for this is that with all the care possible, at the time of operation, it is almost impossible to get the nasal antral opening level with the floor of the sinus, though it may seem to be so at the time of the operation; but when healing takes place the floor of the sinus will be several m.m. below the artificial opening. It is here where the mucopurulent accumulation takes place, due to the fact that it is impossible for the patient to make the proper toilet of the antrum through the nasal opening, which is proven by the following histories:

Wm. V., aged 45 years. December 26, 1922.

History: Frontal and temporal headaches radiating to occiput past six or seven years; nasal blocking to right side the past couple of years. Having mucopurulent discharge.

Examination showed large polypi right side with chronic pansinusitis. At the time of the first operation, there was the removal of polypi and a radical operation for drainage of all sinuses; also, removal of considerable necrotic bone. After several months, there was a large window made into the antrum through the inferior meatus. After several months of treatment and cleansings, there was a continuation of a great amount of discharge. Did a Caldwell-Luc of the right antrum and removed a great amount of granulation and polypous tissue. After several months of further treatment, the other sinuses apparently cleared up but patient complained of slight discharge into the throat.

I then made a large opening through the buccal wall of the antrum, observed the lining membrane and, as one would expect, it was far from normal. At that time, I put in a metal obturator, cast by a dentist friend, the purpose of which was to make it more convenient for the patient and that he might treat the antrum himself. Outside of swallowing the plug once or twice, there was no difficulty in taking care of the antrum. At the present time, he is not wearing an obturator and apparently is in good health.

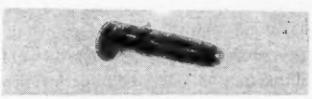

Fig. 1. Obturator made of vulcanite rubber, 3/16-¼ inch in diameter; ¾ inch in length. The flat or labial portion should be about 6/16 to 7/16 inch in diameter and set at about 30 degrees angle to long axis of the obturator and flattened to about 1/16 inch in thickness.

Mrs. M., aged 42 years. November 15, 1926.

History: Complained of severe headaches and pain over both antrums.

Upon examination found both antrums infected. Patient had been treated for recurrent antrum infections by a colleague for four or five years, during which time opening was made into the inferior meatus and antrums irrigated, after which she would apparently clear up.

I reopened the antrums through the meatus and irrigated. Patient would improve for a time but would have a recurrence. After a year of this type of treatment, I did a Caldwell-Luc and cleaned out the infectious material and granulation from the antrum. The patient apparently cleared up, but returned the following winter complaining of a bronchial cough, which the internist thought was of a nasal origin. Upon examination, the nose did not show any more signs of

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infection than one would expect to find in anyone operated on so many times before.

Upon washing the antrum, very slight flaky mucopurulent sediment was found. After numerous washings, the cough cleared up. I stopped the treatments and the bronchial cough returned. We then decided to put in an obturator in the buccal wall so that she might keep the antrum free from infection. This was done on both sides and she has had no complaints for a number of years, as far as her sinuses or bronchial infections are concerned.

Mr. F. F. M., aged 54 years. July 10, 1930.

History: Patient complained of frontal radiating temporal headaches; heavy mucopurulent discharge past several years. Had pneumonia five or six years ago. Hasn't been well since.

Upon examination found sinusitis and atrophic rhinitis. Irrigation showed both antrums were badly infected. Made large openings into inferior meatus in both antrums for drainage. Right side cleared up; left side continued to drain.

Prepared to do a Caldwell-Luc operation on left side. Opened through buccal wall, found very thick, edematous membrane with polypi in antrum. I removed them and decided against doing a Caldwell-Luc, I would put in an obturator and see what happened. He apparently cleared up, and when I wanted to remove the obturator he objected, due to the fact that he probably would neglect cleansing the antrum or nose, and the laryngeal irritation and cough would return.

Four years later, he returned with an infection of the right antrum and requested that instead of doing a lot of antrum punctures and irrigations, as he expressed it, he wished I would put a plug in that side and be done with it. This I did, and now have a satisfied patient.

Mrs. McN., aged 50 years. August 10, 1933.

History: Dates back about fifteen years. Had submucous resection, middle turbinate and antrum-ethmoid operations right side; tonsils removed; also a Caldwell-Luc operation of the right antrum by a man of unquestionable ability. Had been directed to spend the winters in New Mexico, which she had done for a number of years. When the depression came along and it was impossible for her to go to New Mexico, her bronchial cough and headaches of a general type returned.

Upon examination, there was very little evidence of secretions within the nose but there were signs of irritation in the upper pharynx. The x-ray pictures and transillumination showed the apparent thickening of tissue on that side. Upon irrigation of the antrum, I found a very large window in the inferior meatus. Washings showed slight flaky mucopurulent material. After several treatments, her condition considerably improved. In about a month, however, she returned with the old symptoms somewhat exaggerated. As the patient lived considerable distance from the office, I recommended opening the antrum through the buccal wall, and the use of the obturator so that she might give it proper care. To this she consented.

When I opened the antrum to make observations of the lining, it was apparently in a fairly healthy condition, with the exception of the floor near the meatal opening. This area was the part that was irritated and not allowed to heal by sediment collecting.

The approach to the antrum is made on the level of the alveolar floor of the sinus through

Fig. 2. Obturator where patient is wearing upper denture.

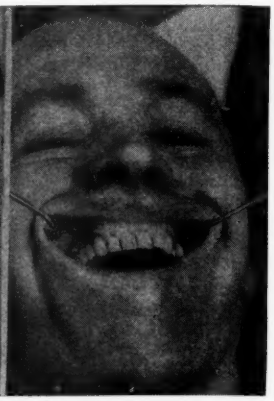

Fig. 3. Obturator, both sides. Patient has full compliment of teeth.

the canine fossa, making the opening through the buccal wall sufficiently large for a thorough investigation of the antrum, and also for the purpose of removing any polypi or granulation tissue which might exist.

The purpose of going into detail, as far as the drainage through this opening is concerned, is for the purpose of saving the operator some of the embarrassing situations which I have had befall me.

Do not try to make the opening anterior to the canine eminence, because the bony wall is very thick, and the angle of approach to the antrum makes it difficult to fit the obturator. Use care in making the incision and handle the tissues as gently as possible so as not to traumatize the nerve structures. Also, the same care must be observed when making the bony opening, because the loop of the anterior-posterior alveolar nerve with its branches is in this area. If this nerve is cut or encroached upon by scar tissue, there will be numbness of the teeth on that side, or worse, a tickling sensation in the tip of the nose as though something crawling. This is most annoying to the patient,

who in turn will be annoying to you. This, however, is more likely to occur in the other radical operations. This sometimes occurs following extractions, or extensive root canal fillings of the central incisors.

For drainage, I use a piece of tubing one fourth to five eighths inch in diameter, about an inch long, with a medium sized safety pin put through the end, and bent corresponding the curve of the maxilla. This is left in place for several days to a week, until all of the swelling of the soft tissue has subsided; also irrigating through the tube cleansing the antrum. Do not try to place in position the permanent hard rubber obturator at the time of operation; because of the post-operative swelling and the large opening there is a possibility of the obturator, slipping into the antrum and causing you much embarrassment trying to recover it. Do not use the bulging end of a self-retaining catheter; sometimes they pull off and are difficult to get out. The permanent obturator should be made of vulcanite rubber.

I have tried the velum rubber, but it is not satisfactory. These obturators can be made by a dentist or dental laboratory as per illustration (Fig. 1) and description as follows: $\frac{3}{16}$-$\frac{1}{4}$ inch in diameter; $\frac{3}{4}$ inch in length. The flat or labial portion of the obturator should be about 6/16 to $\frac{7}{16}$ inch in diameter and set at about 30 degrees angle to long axis of the obturator and flattened to about $\frac{1}{16}$ inch in thickness. Generally, these have to be fitted and the angle changed, which can be accomplished by heating the obturator at angle and bending to fit.

In cases where the patient is wearing an upper denture, the denture is made to fit over the head of the obturator. (Fig. 2) In some cases where the patient had an upper denture previous to operation, I made the permanent opening sufficiently high so that the flat portion of the obturator fit down over the buccal rim of the plate.

The patient is instructed in the technique of irrigation of the antrum which should be done every day, or as often as necessary to keep the antrum free from the accumulation of pus. There is no need for concern about the question of these openings. I have patients who are still wearing the obturator after seven or eight years and are perfectly happy and they have been free from their symptoms, due to non-exacerbation of their infections. I have had three cases return at various intervals, at which times I introduced a Holmes pharyngealscope and made a survey of the lining of the antrum and noted its apparent condition.

As you will note, all these cases have had advantage of conservative and other types of antral surgery, with the exception of the second operation of Mr. F. F. M., which was done at his insistence. They have all been very faithful in performing the toilet of their antrum and nasal passage, and for all intent and purposes are free from their annoying symptoms and are perfectly happy and satisfied with the results.

DISCUSSION

Dr. O. E. Van Alyea, Chicago: Dr. Otrich has described a procedure which has proven satisfactory to a number of his patients. Any method of therapy which will give such a result is welcome to the rhinologist. His cases are mostly of a selected group, those patients who had failed to respond to other methods of therapy. They were desperate cases largely, and anything he could do to improve the situation was welcome to them. It seems unfortunate, however, that the rhinologist should start at that point with some of these chronic sinusitis cases. There should be a method of curing permanently and definitely maxillary sinusitis. His patients are not cured; they still have their disease. They are not complaining, nevertheless, the condition is still present. I should like to ask Dr. Otrich if he in his technic includes a counter-opening into the naso-maxillary wall or does he presuppose such an opening due to the fact that these cases have been operated on previously. Several years ago a similar operation was described by Kuster, and is known by his name. The obturator was placed in a similar position in the antrum. The opening was made in the wall of the antrum for the purpose of observing the lining and removal of pathologic material, and the opening was made permanent by the use of this obturator. Shortly after that the Caldwell-Luc operation came into vogue and the obturator method was discarded. Professor Hajek makes this comment, "the Kuster method has not fulfilled great expectations. The use of the rubber stop makes it unsatisfactory for the patient. If the patient removes the obturator for a short time the opening closes. It acts as a foreign body as long as it remains in the antrum, the secretion does not cease, and from time to time there is an exacerbation. The method has been entirely abandoned." This particular technic did not include a nasal opening.

In our experience we find the Caldwell-Luc a satisfactory operation when it is indicated. In the cases where we have a simple chronic sinusitis we first attempt to clear up the situation by the so-called win-

dow operation. We follow the Hemstead technic described in 1927, which calls for fracture of the inferior turbinate, exposing a large bony area which can be resected and which permits a rather extensive opening in the naso-antral wall. Through this opening an inspection of the lining is possible, and removal of the diseased structures is also possible. That, it seems to me, is the situation in modern rhinology. The window operation should be given a trial. The Caldwell-Luc, a more radical procedure, is reserved for cases of suspected malignancy, bone involvement, and in those cases where there is extensive pathology of the membranous lining, when it is deemed advisable to remove an extensive portion if not all of that lining. The literature is filled with articles by various operators who are following that plan. Goodyear reported the results of eighty-four cases on which the window operation was performed. Seventy-eight were successful while six required reoperation. Williams last year reported the results of 200 such operations which were quite satisfactory. They have followed this plan at Rochester—the window operation in most cases, reserving the Caldwell-Luc for the other type.

I have not seen any of Dr. Otrich's cases, consequently am not qualified to pass on them. If he has a method that is satisfactory I think he should continue to use it, and it may be that cases that do not respond to other treatment would get relief, but I think it should be done only as a last resort. I do not think it should be tried before giving the window operation a chance.

Dr. George Woodruff, Joliet: I have had no experience with this type of operation at all. Of course to me it at first sounds not very attractive, the principal objection being the wearing of a continuous foreign body, and also maintaining a bucco-antral opening. However, I think Dr. Van Alyea has sized up the situation very well; if you have cases which you have given all the usual well-established treatments, and still they do not get well, you have to try something to relieve these patients, and if Dr. Otrich has succeeded here I think he has accomplished something for his patients and should continue to use it. I would rather hesitate to do it myself, but there may be cases it which it is applicable.

Dr. G. C. Otrich, Belleville (closing): In answer to Dr. Van Alyea's question, these cases have all had window openings, permanent openings through inferior meatus, and as he stated, there is an accumulation of mucopurulent material on the floor of the antrum, which you will find in every old chronic case, and this method is what I used as a very last resort.

In speaking of the pitfalls to be encountered in doing this, I think I have had them all. The obturator is made of black rubber, not red, because I have found that red rubber is very irritating in some cases. The obturator is no more irritating to the patient than the wearing of a plate. That is absolutely positive, because the mucous lining fits around it and continues into the antrum opening, and I have found with the black rubber obturator, well-fitting, is no more irritating to the patient than wearing false teeth. As I said, it is a method of last resort. These patients, whose cases I have described are people who live some distance from the physician, and they were taught to make a perfect toilet of the antrum.

SYPHILIS—A PROBLEM IN PRENATAL CARE

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CHICAGO

Syphilis, a very important problem in all fields of medicine and surgery, is especially important in obstetrics because the untreated, pregnant, syphilitic woman may infect another human being—her baby. This is unfortunate in view of the fact that the pregnant woman with syphilis is exceptionally amenable to skillful treatment. She and her child can be protected by measures which would hardly prove curative under ordinary circumstances. Prenatal syphilis offers the maximum opportunity to practice preventive medicine, and with a very small expenditure of energy on the part of the physician in endeavoring to eliminate syphilis in the newborn a tremendous amount of human suffering may be prevented.

We are unable to estimate exactly how much prenatal syphilis exists nor how we are progressing in its eradication, as may be done with other contagious and infectious diseases. Our Public Health Departments forbid and actually prevent the transmission of scarlet fever, diphtheria, smallpox and the like. We have no law permitting them to inquire whether a pregnancy will result in a syphilitic child; yet all will agree congenital infection is transmission of a contagious disease with the victim deprived of all opportunity to escape. Our attitude toward this disease is quaintly medieval. Women of the better classes shudder at the mere mention of the word; the physician shrouds the diagnosis in a number or perhaps never even reports its occurrence to the health authorities; and neither health department nor physician make more than a gesture toward seeking out the source of the infection. Therefore, despite scientific progress manifested in the exceeding efficiency of the Wassermann in detecting syphilis and the effec-

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tive therapy of the arsenicals, mercurials and bismuths, syphilis remains a most active and widespread disease, striking down one in every ten adults. Approximately one per cent. of our population is born infected with syphilis; among the underprivileged the percentage is higher than among the economically able, and the incidence in the colored, 15%, as compared to the whites is a challenge to our social consciousness. In the State of Illinois, where 110,000 to 120,000 babies are born annually, we add an estimated 1,000 congenitally infected infants to our population each calendar year. We permit this when we know that with proper prevention at least 75% of these infants could be born apparently healthy and non-syphilitic.

Fetal and neonatal deaths among syphilitic mothers is much greater than among non-syphilitic mothers; and among children born alive of syphilitic mothers both the mortality and morbidity rates are much higher than among children born of non-syphilitic mothers. Sylvester,[1] in 1926, published a resume of congenital syphilis in Boston, taking for his material a group of infants with clinically recognizable syphilis studied in a 25-year period. He found that from 1901 to 1914, before the Wassermann was used, there was a mortality of 85% within the first year of life. From 1915 to 1919, when the Wassermann became generally available and salvarsan first came into use, the mortality dropped to 33% within the first year of life. The Wassermann test uncovered subclinical syphilis, which had not been detectable previously. From 1920 to 1925, with better diagnosis, better therapy and organized clinics with social service, the infant mortality in the first year of life dropped to 21.5%. The astonishing drop from 85% to 21.5% mortality demonstrates the value of the Wassermann test and the arsenicals. Sylvester further studied the morbidity of infants in these three periods and reported that a syphilitic child is apparently more susceptible to colds, otitis, pneumonia and other infections than is the non-syphilitic child. He estimated the morbidity as 85% in the 1901-1914 group; 50% in the 1915-1919 group; and 35% in the 1920-1925 group.

On the basis of these findings alone, which probably can be duplicated in other large clinics, we would be making a long stride forward if we could require that every birth certificate in this country be accompanied by a Wassermann report. Unless we do this we are not making full use of scientific progress. While a negative blood does not always mean there is no syphilis present, a Wassermann, if made early enough in the pregnancy so that the mother may be treated, will aid materially to weed out the syphilitic child from our population. Prejudiced groups undoubtedly will arise to object that the enforcement of such a law would infringe upon their constitutional rights, entirely overlooking the fact that the child infected before its birth is born to a life shorn of rights and opportunity. It has required much labor on the part of interested groups to secure in the majority of the states the passage of a law requiring the Crede treatment to prevent blindness in the newborn, and unquestionably a huge and painstaking expenditure of effort will have to be made to educate the public to the necessity for a routine blood test on all of our pregnant women. Nevertheless, wholesome propaganda could effect this. In the Scandinavian countries, where a routine blood test on all pregnant women is required by law, they have reduced congenital syphilis to about 400 cases in a population of six million.

It is routine in the majority of charity hospitals to make blood tests on obstetrical patients, and also in a few private hospitals. Paradoxically, it is the private patient who is neglected in this respect. Her obstetrician dislikes to suggest anything so unpleasant as syphilis, with its social and moral implications, and relies upon his or her physical examination to indicate the necessity for a Wassermann. This is not practicable because syphilis in women is exceedingly difficult to detect. In most women the stigmata are very likely to be clouded so as to elude the eye of even a trained syphilologist. We should bear in mind that there is a distinct difference in the manifestations of syphilis in the male and the female, and additionally that there is a protective influence exerted by the pregnancy against the development of active manifestations. In the child bearing years a woman may show absolutely no clinical symptoms, have a negative Wassermann and yet the fetal tissues of her progeny may harbor spirochetes in enormous

numbers. The infected child may be the only frank diagnostic fact in the entire picture. Certainly syphilis has a milder quality in the female and tends to become latent in her during the childbearing period, the positive Wassermann and perceptible lesions appearing with the approach of the menopause. This suggests that the ovarian and placental hormones exert an influence that is at least temporarily beneficial. Warthin,[2] in commenting on the difference in the pathologic picture in the male and the female, stated:

"It might be that the Spirochaeta pallida is a pathogenic descendant of some harmless spirochetal form inhabiting the female body ages ago, and that in consequence woman establishes a more comfortable partnership with this organism than does man. Such a theory does not, however, explain a higher degree of immunity of the woman during the period of childbearing, and the apparent increase of immunity as the result of conceptions. Whatever may be the explanation of woman's relative immunity to this infection, whether one or several of these factors contribute to it, the important fact remains that syphilis manifests itself in the female almost as if she were another animal species, and that about this sex difference in reaction to infection with Spirochaeta pallida there center not only grave sociologic problems but also the most difficult practical problems in the diagnosis and treatment of syphilis."

Permit me, therefore, to leave with you the knowledge that syphilis cannot be detected in a pregnant woman by means of a physical examination alone.

The immunity to syphilis enjoyed by the childbearing woman is not transmitted to her child. The fetal tissues afford a most fertile soil for the development of the spirochete, and it multiplies to an extent never approached in the tissues of an adult with acquired syphilis. The primary stage is lacking and the process resembles the tertiary stage in the adult except that we find more treponemata in the tissues of the fetus and the infant than in the adult.

The large placenta, pale, thick and friable with well marked cotyledons and thickened membranes, weighs almost a quarter as much as the fetus. Examined microscopically we find vascular changes that lead to curious modifications of the villi. The blood vessels of the villi show periarteritis, arteritis, and even obliterating endarteritis, and the individual villi become thickened and bulbous due to an overgrowth of connective tissue cells. The placenta, however, is the site of an intense reaction against the parasite. Brindeau and Manouelian[3] studied the placenta of an apparently healthy woman twenty years of age, delivered of a syphilitic child. Histologic examination showed only a few typical spirochetes in the veins of the chorionic villi. There were, however, enormous numbers of treponemata in the phagocytes of the veins, some of them still recognizable, but more of them in the form of debris. In the polynuclears and mononuclears there were fine granulations from disintegrated treponemata. There were no degenerated spirochetes free in the veins; all were enclosed in the phagocytes where there were a series of intermediate forms from typical parasites to fine granulations.

The fetal lungs show proliferation of connective tissue and round cell infiltration in the alveolar walls. There is a perivascular and peribronchial infiltration of round cells and connective tissue, and there are spirochetes galore in the epithelial debris which fills the alveolae. These changes account for the pale, firm patches of pneumonia-alba in the lung which fails to function at birth, or, if it functions at all, does so very inadequately.

The liver shows retarded development. At birth there still persists the appearance of an active blood forming organ, which is a function only in fetal life. The liver is enlarged, firm and tough, and may be one-tenth to one-eighth of the total body weight. The capillaries are wide and distended with groups of blood cells of all sorts. A network of connective tissue passes in and around the liver cells, and in some cases the poliferation of connective tissue is so extensive that there is pressure atrophy and necrosis of the liver cords. The normal hepatic architecture is destroyed, and one sees scattered clumps of liver cells separated by much vascular fibrous tissue and abundantly infiltrated with round cells. Everywhere the connective tissue invades and conquers. The pancreas and spleen are enlarged due to a hyperplasia of the normal cellular elements.

The bones show marked changes at the epiphyseal line of the long bones, with ragged areas of bone formation, round cell infiltration and proliferating connective tissue. This is espe-

cially true at the distal ends of the femur, tibia and radius. The periosteum and perichrondrium or thickened. Thus the normal function of bone formation is disturbed, and we can make use of this fact in an infant in whom we suspect syphilis but are unable to prove it clinically or by blood test if we will make an x-ray of the long bones.

The changes in the kidney are not characteristic but frequently there is imperfect development of the glomeruli with areas of atrophy, fibrosis and round cell infiltration.

The vascular changes in the placenta limit the nutrition that may be carried to the fetus; the spirochete stimulates the formation of pathologic tissue in the fetus; and we have an organism attempting to develop at a rapid rate deprived of its normal, essential, adequate nutrition and subject to a toxic influence of overwhelming proportions. This short resume will serve to indicate how abundantly the spirochete flourishes in the fetus, and, because of the associated seeming well being of the mother, contributes to the problems of prenatal care.

The Co-operative Clinical Group[4] studied pooled records from five large clinics to determine the outcome of pregnancy in syphilitic women, and the conclusions of the group are significant because of the large number of women observed in clinics of recognized standing. They studied 3,817 syphilitic women under treatment or observation for six months or more. Six hundred and three of these women had 922 pregnancies after their syphilitic infection, 607 of these pregnancies form the basis of their study. Using their findings as guides I wish to point out a few very important rules for the prenatal care of the syphilitic woman.

1. *Negative Blood Reaction.* A negative blood reaction is important. While insufficient in itself to insure a living, non-syphilitic child—a negative reaction never guarantees the birth of a normal child—80% of syphilitic women with a negative Wassermann will give birth to apparently healthy infants. I say "apparently healthy" because all children born of syphilitic parents should be followed for two years; there is an incubation period of apparent health after birth before symptoms develop in the infant.

2. *Stage of the Mother's Infection.* If the mother's blood is negative the stage of her infection may not be important, but if her blood is positive the stage assumes vast importance. The later in the disease is the mother before conception takes place the less chance there is of syphilis in the child. It is the young mother who is our chief concern; she is most likely to be positive. The duration of her infection is short and she has had less time to receive treatment and augment her natural immunity.

3. *Source of Syphilis in Women.* The majority of young women are infected by husbands who acquired the infection before marriage, though, of course, it does not follow that because a woman who has syphilis is married that she has been infected by her husband. Stokes,[5] says: "Fournier found that 67% of 208 women were infected by men who acquired the disease before marriage; Bulkley found that 82% of his syphilitic women patients were married; Blaisdel (Boston) found that 79% of his syphilitic women patients were married and Solomon 76%. Fournier's analyses showed that 75% of his syphilitic married women acquired the disease from their husbands. The Solomon's from a critical examination of their experience, estimate that 80-90% of the husbands acquired syphilis before marriage. Our own experience with a rural American clientele indicated that more than 90% of sexual exposure in men is ante marital and that this is the source of familial infection."

4. *Age of Infected Women.* The Clinical Group[4] show that the majority of the women they studied had acquired the disease before thirty years of age:

	16 to 29 years	30 years and over
White females	79%	21%
Colored females	88½%	11½%

A visit to any large venereal disease clinic will demonstrate the accuracy of these figures because most of the patients are in the early twenties.

5. *Optimum Time in Pregnancy for Treatment.* Treatment should be begun early in pregnancy, preferably before the fifth month. The earlier treatment is instituted the better the prognosis. In the Clinical Group[4]

167. syphilitic mothers treated *before* the 5th month gave birth to 78% living apparently non-syphilitic babies.
218 syphilitic mothers treated *after* the 5th month gave birth to 60% living apparently non-syphilitic babies.

The best results, therefore, are obtained by giving adequate treatment and starting early enough in the pregnancy and continuing to the termination thereof. It should be added, of course, that if the disease is discovered late in the pregnancy, some treatment is better than none.

6. *Treatment Necessary in Each Pregnancy.* Treatment should be given throughout each pregnancy. It is the treatment during the present pregnancy that influences the outcome. A mother may have had adequate treatment in the past, yet it is possible for her to be a carrier of the parasite and thus a possible source of transmission of the disease to the fetus. It is a safe rule to follow that every mother with syphilis, no matter how much treatment she has received in the past, no matter what her physical condition or the status of her present Wassermann should receive early and adequately therapy during each pregnancy to insure the birth of living, apparently non-syphilitic children. Gammeltoft[6] of Copenhagen has shown that a syphilitic mother may be delivered of a syphilitic child many years after her infection. Other workers also have shown this to be true. Again it is necessary to remind ourselves of the difference in the behavior of syphilis in the male and the female. A man skillfully treated for syphilis should reach a non-infectious state in five years; a woman so treated may violate all rules with reference to transmission of the disease to her children. It is a well known fact that a syphilitic individual, no longer capable of transmitting the disease to a sex partner, may as a donor in transfusion give the disease to another. Likewise the pregnant woman may transmit the infection through the placental blood to her unborn child long after she, herself, has built a resistance to the disease and also has become innocuous to her sex partner. The syphilitic mother must be considered as a potential reservoir of infection for the fetus she carries, even though she can no longer transmit the disease to others. Given a woman with a negative Wassermann in seemingly good health, a history of adequate treatment in the past, and the mother of an apparently healthy child, we might find her a most reluctant patient for therapy in a subsequent pregnancy, and a physician might be tempted to consider further treatment superfluous. Most emphatically she should be treated during the new pregnancy, and during every pregnancy, regardless of treatment in the past and whether her infection is of long or short duration. To pursue any other course is to assume unjustifiable risks.

I believe we frequently are mislead by what we term "latency" in a syphilitic patient. The marked self-resolving power of the disease and the effectiveness of present day therapy in rapidly obliterating symptoms leave the patient outwardly free from gross signs of the disease. Nothing is more treacherous than this seeming well being. In the latent syphilitic, man or woman, we must visualize the spirochete hidden in silent areas, temporarily inaccessible to therapy, but nevertheless irritating the tissues and producing a persistent rearrangement of the microscopic anatomy. When disequilibrium between the spirochete and the immune processes of the body takes place there is a redistribution of the spirochete by the bloodstream, or a spirochetemia, with minor explosive phenomena expressed in transient anemias, periosteal infiltrations, gummata, nervous symptoms of varying degree, etc. The case report listed below will demonstrate the rise and fall of spirochetal activity in the life of one woman inadequately treated, so that you will appreciate the necessity for treatment during each and every pregnancy regardless of the blood reaction or the duration of the infection.

Mrs. H. P., aged 40 years, married at 19 years to a man infected with syphilis 6 months before and treated for 3 months only.

Pregnancies:

1st—Miscarried at 3 months.

2nd—Stillborn.

At 22 years of age mother received antisyphilitic therapy for 6 months.

3rd—Born alive, died at 6 weeks.

4th—Born alive, now 16 years old and being treated for interstitial keratitis.

5th—Born alive, now 13 years old; Hutchinson's teeth and saddle nose.

At 29 years of age the mother received intensive antisyphilitic therapy for one year.

6th—Born alive, now 10 years old, and apparently normal.

7th—Born alive one year ago, and died at 8 weeks.

In this woman in whom the immune forces were sufficiently in control so that she gave birth

to an apparently healthy child—the sixth, the following, or seventh pregnancy, ended as fatally as the first one. Active treatment during each pregnancy would have changed this picture from one of great human wastage.

7. *The Pregnant Woman's Ability to Tolerate Treatment.* We come now to the problem of whether or not the pregnant woman will tolerate treatment with arsenicals, mercurials and bismuths when her kidneys and liver are under the maximum strain of the pregnancy. There are records to show that in all recognized clinics intensive treatment is being carried out successfully and with no danger to the woman. The Co-Operative Group[4] statistics demonstrate that the pregnant woman experiences fewer reactions than does the non-pregnant woman. Arsenical dermatitis was twice as frequent and icterus five times as frequent in the non-pregnant as in their pregnant group. Their results, as follows, are very convincing:

REACTION TO ARSENICALS GIVEN BY THE CO-OPERATIVE GROUP

	Treatments Given	Reactions
Syphilitic women, pregnant.....	4,581	82
Syphilitic women, never pregnant..	55,066	1,324

Francois Mauriceau,[7] one of the leading French obstetricians of his day, reported as long ago as 1660—or almost three hundred years ago, how a determined woman demonstrated the feasibility of vigorous treatment for syphilis in the pregnant woman, and I quote his quaint tale as an interesting item of medical history not at all out of place in our discussion of 1936 methods:

"I know very well that many will not easily be persuaded, but that either it is impossible to cure a woman of the Pox whilst she is with Child, or that she and her Child cannot undergo the remedies without inevitable danger of death: However, the experience I have of it myself, makes me to be of another opinion, which I am willing to communicate for an example in a like case. In the year 1660, when I practis'd Midwifery in the Hostel de Dieu at Paris, a young wench, not above 20 years old, came thither to lie in of her second child, that had had the Pox before ever she conceived the first time, and after miscarried of a dead child, rotten with the Pox: therefore, being big this second time, and perceiving the accidents of her disease to augment more and more, she concluded there was no hopes this great-belly would succeed any better than the first, because she had all over her body, especially upon both her breasts, very many malignant ulcers, which encreased daily; and fearing it might turn to a Cancer before her reckoning was compleat, being but three Months gone, she resolved to submit to a thorough cure then, and to hazard her life in that condition to save her child's, having no other hopes to effect it, nor being able herself to restrict the growing disease. She acquainted three or four chirurgeons both with her disease and design, not at all concealing her great-belly; who for that cause would not undertake her (altho she was fully resolved upon it, and promised to pay them well), telling her that their conscience would not suffer them to do it in the condition she was in, and that it would be better she would patiently submit to it as well as she could, till was brought to bed, and then they would very willingly undertake her: But when she found none would undertake her, unless she concealed her great-belly, which was not hard to be done, being but 3 months gone, and believing there was no better an expedient; she met with another (to whom she mentioned nothing of her great-belly) that put her in the ordinary course, as if there had been no conception; and by five or six reiterated frictions of the ointment, which followed her very plentifully five whole weeks, so that she was well and perfectly cured, without leaving the least ill accident behind of her disease. When she was almost recovered, and that all had succeeded well, she told her chirurgeon she was four months and a half gone with child, (for she was 3 months when she came to him, where she lodged 6 weeks intire, without having it in the least perceived) which at first he could hardly believe, but perceiving her belly rather grown bigger than less, during the evacuation the physik had made, he was immediately assured of the truth of it: She informed him, that the reason why she had concealed her great-belly, was the refusal of four chirurgeons (to whom she confest it) made to take her in hand. From the time she was cured she suffered not the least inconvenience during the remainder of her time, except a little want, because all the money she had was given the chirurgeon for her cure, which made her come to the Hostel de Dieu to lie in, where I delivered her of a child at the full time, as big, fat and healthy, as if the Mother never had the least touch of that disease in her whole body; and which was very remarkable, the burden (which is a part very susceptible of the least impression of the woman's corrupt humours) was as neat, fair and ruddy as could be imagined."—(Dr. Herbert Thoms' Classical Contributions to Obstetrics and Gynecology.)

A discussion of prenatal syphilis is incomplete unless we devote a part of our time to the public health aspect of the problem. It is useless to discuss the treatment of a disease and ignore its prevention. The control of venereal disease has been considered a major health activity since the close of the war—1918; and we have at our command remedies that absolutely will render syphilis non-infectious. Despite these two facts this disastrous disease con-

tinues to strike down more victims than scarlet fever, tuberculosis, and even the dreaded auto accident, and the great majority of these stricken people are between fifteen and thirty years of age. I believe if we could make all the facts known to the public we could do away with the secrecy which surrounds this disease. In the education of the public, the radio, press, pamphlets and books have been the avenues for suitable publicity; it has been through these media that scientifically accurate preventive measures have attained to a degree of usefulness in a relatively few years. At the present time venereal disease propaganda is in the position of giving offense. A syphilis control program cannot meet with the success which has characterized other campaigns of disease prevention unless we can mold public opinion and disseminate the necessary information. If expectant mothers could be made to realize the necessity of a blood test, only a small minority would fail to demand it. In February, 1935, The Department of Health of New York City, co-operating with the health and welfare agencies of the city, made an effort to further knowledge concerning congenital syphilis, and to arouse a greater appreciation on the part of the public to the fact that the continued death of babies from syphilis is inexcusable because it is preventable. They asked physicians to make routine blood tests on all pregnant women under their care. They employed lectures and radio, distributed leaflets, and carried whole pages of information in the newspapers. Such a campaign once a year in every city having a population of 50,000 or more would reduce congenital syphilis in a very few years.

Summary: Syphillis remains active and widespread despite the Wassermann and arsenicals. Approximately one per cent of our population is infected at birth.

We would be making a long stride forward if we could require a routine blood test on all pregnant women.

Syphilis has a milder quality in the female and tends to become latent in her during the child bearing period; the fetus, on the other hand, enjoys no such immunity.

A negative blood reaction is important in the pregnant woman; also the stage of her infection.

Treatment should be begun early in pregnancy, preferably before the fifth month; treatment is essential in each pregnancy; and the pregnant woman tolerates intensive therapy very well.

Wholesome propaganda to acquaint women with the necessity for a blood test in pregnancy is necessary.

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THE RADIOLOGIST AND THE HOSPITAL

W. M. Hartman, M. D.

MACOMB, ILL.

My offering today is a brief and direct discussion of a serious situation in the Medical Profession. This situation is one with which you all are familiar, and perhaps from which some of you may have suffered. It is, in fact, becoming more and more "old stuff" to Radiologists.

Much has been said and written about the dangers that threaten the future of Medicine, especially from political, social, and economic sources outside our profession. Such attacks are needed, and should be expected as a part of the natural growth and evolution of a profession. It is very much to the credit of Medicine that we have been left so much to ourselves to work out our own problems. True, the dangers outside the ranks need to be appreciated; but, I feel that we must not overlook the more serious threats that arise from within our ranks. What others are trying to do to us is not as important as what we are actually doing to ourselves.

Since 1900 the technical advances in the treatment of the sick have been so rapid and the demands for institutional care, naturally resulting therefrom, have been so great that much

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hospital building has happened. In the hospitals themselves the technical demands for specialized service in clinical, pathological, operating room and x-ray departments began to require more and more help and more and better equipment. And competition and showmanship also had its part.

Gradually emphasis began to be placed more and more on equipment and machines. Technology was asserting itself. Less emphasis was placed on skill, training, personality and ability. There was less mention of the man behind the machine. Down our way we had a man who always boasted the possession of "the biggest x-ray machine outside Chicago." Who would hunt a surgeon because he had the most expensive operating table east or west of Rochester?

The importance of hospitals in the present day general scheme of things medical is so great that the physician is unable to practice successfully without hospital connections. This is especially true of recent graduates who are inclined to lean too heavily on technical assistance.

From its very nature much radiology must be done in hospitals. This means large investment in space and money and the installation of elaborate and complicated machinery. The machine tends to outshine the man. The man is dependent on the machine. The institution is back of the machine. The institution is a lay organization working on a commercial basis; and it is not held by the bonds of Medical Ethics. And right here is where things crack up, and exploitation of the Medical Profession begins.

The specialties of surgery, internal medicine, obstetrics, pediatrics, urology, and eye, ear, nose and throat, all older more secure and independent, are inclined to feel, I fear, that there is a vital difference between their position and that of the radiologist. The patient is their patient. They are responsible for diagnosis and treatment, and for ultimate success or failure. The radiologist is some kind of a genius in mechanics, electricity, and photography. His contact with the patient is limited and at the request of a referring man. Therefore he is more interested in the technical problems involved than in the patient. He is more technician, than doctor, to the rank and file of medicine. So why bother with what is happening to him? What harm can come of it?

The law has upheld the medical profession that only physicians are licensed to practice medicine. The courts in Illinois have ruled that corporations are not permitted to do so. California courts on three different occasions have given the same ruling. The practice of radiology is the practice of medicine. Its technical details are a necessary and intimate part of its practice. Some may be delegated to technicians, but must in every case, be under the control and supervision of the radiologist. Technique is a necessary part of his professional life from which it cannot be separated. When a hospital hires and fires, controls the personnel of the department, and makes and collects the fees, it is practicing medicine.

That is why we should bother about it. There lies the serious threat to the practice of medicine today. General medicine and the older established specialties must know what is happening. They must be made to realize that this is happening to them. It is their ox that is being gored. When the staff of a large hospital advises the management to invest in x-ray equipment and hire a technician so that they may make some money, when a radiologist who has built up a practice in a hospital over a long period of years is then dismissed, in order to employ some one at a lower salary for the profit in the change, and with the tacit consent of the staff, something is very wrong. The wrong lies not with the hospital. It lies with the doctors who constitute the staffs of their respective institutions.

It is the responsibility of the staff of each and every hospital to see that the management of the institution recognizes the position of doctors practicing within their walls. Progress can only come by the development of mutual understanding and cooperation. All must work together and no one department should be favored to the detriment of other departments. The doctor needs the hospital. The hospital needs the doctor. Let them get closer to each other so that the patient whose interests count for most, may receive the very best of medical care and the very best of hospital service.

Hospitals and governing bodies all agree that

radiologists are medical specialists. Surely, it is now time for them to emerge from their mechanized chrysalis, and, as true consultants, function in their full capacity, based on a personal relationship with the patient.

The solution of the problem lies with the general medical profession acting through hospital staffs. It is up to radiologists to get busy and educate their colleagues to realize that their special consuls are not only needed; but that they can not get along without them. Interpret films in terms of anatomy, physiology, and pathology. Relate them to the history and clinical findings. Take more active part in the proceedings of County Medical Societies, and do more than merely demonstrate a sheaf of x-ray films. Demonstrate to hospitals and to colleagues that it is brains and not mechanisms which are offered; and radiology will assume its rightful place in medicine.

CONCLUSIONS

1. There is evidence of the practice of medicine by hospitals, in their respective departments of radiology.

2. This should be vigorously resisted by a campaign of education by radiologists working through their hospitals staffs and County Medical Society Units.

3. This situation should be recognized as a breakdown in medical practice which is especially dangerous because it comes from within the ranks of organized medicine itself.

DISCUSSION

Dr E. P. Coleman: It may seem a little bit out of order at first thought for one not particularly interested in x-ray to discuss this paper, but that is not the case. Dr. Hartman's topic is very important and points out something we may all face in one way or another. In connection with the social security problem in the past years I have been rather interested in seeing what attempts have been made by quite a number of organizations to control the practice of medicine. The hospital x-ray problem is the one most open to question at the present time. It should not be but apparently it is. It is a problem in economics, it seems to me, not only for you x-ray men but for all who have hospital connections.

May I emphasize by an example? In a county not so far from here, the relief funds were found to be rather inadequate. If the usual fractures, acute appendices and so forth were taken care of by the medical men and a rather meager fee paid by the relief organization for them, there was not enough money in the fund to carry more than the 15th or 20th of the month and the work done after that had to be done gratis by the profession. The doctors in the community got around it as far as this temporary solution was concerned. They put the medical fee at the regular rate. The house call was the regular fee. The office fee was the regular fee in that community for the ordinary cash customer. That was the relief fee also. That would not take care of surgery. They sent their surgical cases to the hospital in that community where they were taken care of free by the doctors on the dispensary staff. Surgery was done by the doctors in the hospital gratis. The hospital collected the hospitalization fee. The doctors donated the services.

If we have the x-ray man hired and fired by a hospital board, it is only a short step until the surgeon is hired and fired by the same hospital board or by the hospital superintendent. The one who stands in with the hospital may have the job; otherwise not. You all know how uncertain that tenure of office might be.

There are certain trends along this line that I think you might be able to combat in some ways. Different communities have different problems, of course, and what would work in one community might not be effective in another. But there are some principles nevertheless whereby this can be worked out in some communities. It would be foolish for me to offer a solution of x-ray problems to x-ray men. But as it applies to the profession as a whole, I believe some problems can be worked out on this basis. Some hospitals, for example, have had the doctors own the x-ray equipment, or a group of doctors or one doctor may own and install the x-ray equipment and that be used on a rental basis from the hospital. Where that has been done it has been a solution of the problem. But in many communities the doctors cannot afford to do that, and when the staff complains that the machinery is obsolete or some glib-tongued salesman persuades the board to buy a new machine the board buys it. When they do that, the only problem they see is how they can charge the patient more. That brings up the problem Dr. Hartman suggested.

One possible way out may be this: obtaining representation on the hospital board by medical men in small communities, the type I come from, at least. Doctors frequently are not represented on the hospital board; doctors control the staff but there are none on the board. I do not know of any hospitals around this section of the state where doctors are a majority on the board. The board is run by some religious organization or by some groups of business men, the type we have seen discredited in their own business in the last four years but they tell us how to run a hospital. If we can get representation on that board, I believe it will solve some of our problems.

How can this be done? We do not want too many doctors on a board. We want business men on the board, but if we can have a minority representation, I believe we can have representation from the hospital staff as a full-fledged board member and in the small community an additional representative from the

county medical society. Those two medical board members may be able to prevent some of the types of socialized medicine that hospitals are trying to introduce, unintentionally, perhaps, but nevertheless trying to introduce. This cannot always be done but in many cases I think it can.

In large cities I think we are going to be faced with the problem of group hospital insurance next year. Down state much effort has been made this year to put that idea over. Personally I am opposed to it, but we are going to be compelled to face it unless we get control of our hospital boards.

Dr. I. S. Trostler: I have some very heartening news for radiologists. At the meeting of the American Medical Association at Kansas City last week, the House of Delegates of that body definitely went on record and stated, that "Roentgenology cannot be divided into technical and diagnostic." In other words they said that technical and medical radiology cannot be separated.

Furthermore, this same body declared in no uncertain terms, that the practice of radiology is the practice of medicine.

Here are two good, definite points which advance our position along the line that Dr. Hartman mentioned.

Dr. W. M. Hartman (Closing the discussion): I have only this to say. If there is any value whatever in this paper, my hope is that it may stimulate radiologists to give more voice to their problems and make them more familiar to the rest of the men in the general medical profession. I think, as a group, radiologists have been very weak in making their position clear. Of course, it is a new group, a new specialty, and is still struggling to place itself. But I think we need to get into the smaller units. As a man from down state, a country doctor, I know the rank and file of the medical profession have a very confused idea, if they have any idea at all, as to just what this is all about. They do not understand how it may directly affect them. The hospitals, I am sure, as far as my contacts have gone, are glad to do their part in giving medical service.

Dr. E. P. Sloan of Bloomington, I thought, expressed it very well at Bloomington a year ago, when he said that in his personal contacts with radiologists he had found them rather bashful. He was glad to know they could express themselves so well when they got together. He did not understand why they did not express themselves more in general meetings.

OCCUPATIONAL THERAPY IN MENTAL HOSPITALS

B. LEMCHEN, M. D.
CHICAGO

Occupation among mentally ill and prisoners is not new. It has been used ever since we have mental hospitals and prisons. In fact, articles produced in those places become so enormous that several states had to pass laws to prohibit their sales so as not to compete with Union labor. However, in former years, patients in mental hospitals and prisoners were employed for the benefit of revenue. Today we employ mental patients for the benefit of the patients themselves. Like all therapeutics from the beginning extravagant claims were made for that form of therapy. However, from years of experience, I can state without hesitation that occupational therapy is a valuable adjunct in the treatment of mental cases. Till the causes of insanity are known, the treatment of it must naturally be empiric.

The mind which is still a mystery can only be studied through the manifestation of the possessor.

In other words, we can only tell that a person hallucinates, or has delusions, if he tells us so, although experienced psychiatrists can sometimes tell from their actions that they do. No one, however, can tell what is going on in a person's mind by merely looking at him. From the above statement it can be seen that for a correct diagnosis, the cooperation of the patient is essential. The same is true in the treatment; we must try to win the confidence of our patient first, before we can successfully apply occupational therapy. To force a patient to do things which he does not care to do, will seldom help a patient. Kindness and patience are to an occupational therapeutist what skill in compounding a prescription is to a physician. Our procedure is simple.

When we receive our patients from the psychopathic hospital, they are carefully examined both mentally and physically. Those that we think other forms of therapy like medical, hydrotherapy, physiotherapy, etc. will benefit best, of course will receive that line of treatment. When we think patients will benefit from occupational therapy, we proceed by first finding out what the patient's occupation was before he was committed, and if he likes to continue to do the same kind of work while in the hospital, we let him do it, and watch the progress in his mental state, changing occupation if in our opinion, that will benefit the patient.

Those patients, however, who did not have any occupation before they were committed or are un-

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willing to do any kind of work or owing to their mental state are destructive (who are constantly trying to destroy things, for those patients we have classes under experienced instructors who try to convert destructive tendencies into useful tendencies. We have in the Chicago State Hospital twelve trained occupational therapists of whom Miss Florence Starks is the head. The patients are divided into classes. We put as many patients in a class as will fit in that class. We grade the classes from kindergarten upwards. We have habit training classes for untidy patients, singing classes for those that are interested in singing, calisthenic classes for those interested in gymnastics, etc. Those patients that have destructive tendencies we put in a class by themselves. We give them rags to tear. While they are busy tearing rags, they do not tear their clothes, bedding, nor do they fight, and the most important thing is that their minds are occupied; they have no time to listen to voices or to dream which is so common in dementia praecox and which is a great factor in their mental deterioration. All that beautiful art work you see here tonight, was made by our patients. Some of these would surely have deteriorated were it not for the extensive occupational training they are receiving. When they improve we advance them to higher grades of work, etc.

To sum up. In the twenty-six years I have been connected with mental hospitals, the number of patients that make good after they leave mental hospitals, have more than tripled; those that stay in mental hospitals are more contented, fightless and live a more normal life. However, there are other factors that must be taken into consideration. We must consider that patients are committed earlier in their disease, the abolishment of restraint, other modes of treatment like hydrotherapy, physiotherapy and the newer medical agents that were not at our command in former years, these are surely factors in the good results we are obtaining in the care of the insane, but even so, improvements are more numerous and lasting longer than under other forms of treatment.

I am not going to burden you with statistics. I will just mention that for a given time, more patients from the Chicago State Hospital were restored to their rights and fewer patients were injured during that time, in which results occupational therapy was a leading factor. (When a patient is committed to a State hospital he loses his citizen rights, which can be restored by the County Court if proven to the satisfaction of the Court that the patient has recovered.)

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THE INCIDENCE AND CLINICAL SIGNIFICANCE OF VARIOUS TYPES OF THE DIPHTHERIA BACILLUS IN ILLINOIS

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The conquest of diphtheria has been marked by six outstanding contributions to our knowledge of the bacteriology and immunology of the disease. The identification of the etiological agent by Loeffler in 1884, the demonstration of its toxigenicity by Roux and Yersin in 1888, the preparation of antitoxin by von Behring in 1890, the diagnostic skin test by Schick in 1908, the active immunization with toxin-antitoxin by von Behring in 1913 and the preparation of toxoid by Ramon in 1924, have each been milestones marking our advancement against diphtheria. However, along this path of scientific progress many gaps have been left in our knowledge of the biology of the disease and its causative agent. One of these gaps was apparently uncovered by Anderson and his co-workers[1] in Leeds, England, in 1931. It had been tacitly assumed by modern bacteriologists that all of the essential details of the morphology and biochemical characteristics of the diphtheria bacillus were known, but the discovery of Anderson and his co-workers casts serious doubt upon this assumption. If Anderson's findings prove correct, his contribution may mark another significant milestone in our knowledge of the disease.

In 1931 Anderson and his co-workers announced that most strains of the diphtheria bacillus fell into one of three groups according to their colonial morphology and certain biochemical characteristics. They further stated that the clinical severity of the disease was directly

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correlated with the type of the diphtheria bacillus causing the disease. On this basis they proposed that those strains having certain cultural characteristics and which they found to be most frequently associated with the severe cases should be called "gravis" strains, while those strains having certain other cultural characteristics and usually isolated from mild cases were termed "mitis" strains. A third or "intermediate" strain was also described which possessed some of the cultural characteristics of both the gravis and mitis strains and was usually associated with the more severe cases of the disease. For details of the characteristic colonial morphology and the associated biochemical and cultural reactions of the three types, the reader is referred to the original paper of Anderson and his collaborators.[1]

This revolutionary announcement at once caused many workers in England to attempt to corroborate Anderson's results. While there have been many controversies over some of Anderson's conclusions, it may be generally stated that in England, Scotland and Germany, the only place where similar studies have been made, the essential findings of Anderson, described in his original communication, have been satisfactorily confirmed. The discrepancies in Anderson's work, reported by several investigators will be discussed as they pertain to the results found in our study of the types of diphtheria bacilli found in Illinois.

With the exception of a brief report by Whitley[2] on the incidence and clinical significance of the gravis, mitis and intermediate types found in Maryland, there has been no report,* so far as we are aware, of an attempt to corroborate Anderson's findings in this country. We, therefore, believed it of interest to determine the incidence of the various types of diphtheria bacilli in this state and to attempt to correlate the types of the organisms with the clinical severity of the cases from which they were isolated. To this end we have studied the majority of the diphtheria strains isolated from the nose and throat cultures routinely submitted to our central and branch laboratories for diagnosis, quarantine release or inspection during the past six months. All of these strains were grown on Anderson's[1] chocolate-tellurite medium to study their colonial morphology, and many of them have been tested for virulence and starch fermentation.

Information regarding the clinical severity of the cases from which the strains were isolated was obtained by sending questionnaires to the physicians attending the cases. While the number of cases in this series is admittedly small, we believe that our results are significant enough to warrant the presentation of a preliminary report at this time.

Incidence of the various types of Diphtheria Bacilli in Illinois. Swabs from 109 cases and carriers were streaked on Anderson's chocolate-tellurite medium and the plates incubated 48 hours at 37°C. before examining the colonies with a binocular colony microscope. A stained smear was also made of the organisms in the colonies and examined microscopically to be certain that we were typing only colonies of the diphtheria bacillus. From these 109 cases and carriers, 162 strains or cultures were isolated, of which 5.5% were gravis, 78% intermediate, 2.9% mitis and 4% atypical strains. Mixed cultures containing more than one type of the diphtheria organism were found in 9.2% of the cases and 9% of the carriers.

Table 1 indicates the types of strains isolated from the 109 cases or carriers. It will be noted that the majority of the strains fell into the intermediate group, while the gravis and mitis strains constitute only from 3 to 5% of all the strains isolated. The strains not conforming in their colonial morphology to any of the three types, designated as atypical strains, are very few in number; and the cases from which more than one type was isolated either on primary or repeated culture, constitute approximately 10% of the entire number.

Table 2 shows the incidence of the various types of the diphtheria bacillus in certain cities in England, Scotland and in Berlin—the only countries where such studies have thus far been conducted. It will be noted that the percentage distribution of the various types differs greatly in the locations investigated. In those places where a severe type of the disease occurs, the

*After this paper was presented for publication, a report by Perry, Whitley and Petran appeared in the Am. Jour. Hyg., 23: 539, 1936, describing the distribution and significance of the types of diphtheria bacilli in Maryland.

TABLE 1. TYPES OF DIPHTHERIA BACILLI AND NUMBER OF CULTURES ISOLATED FROM 109 CASES AND CARRIERS

					Mixed Cultures				
	Gravis	Intermediate	Mitis	Atypical	Gravis and Intermediate	Mitis and Intermediate	Atypical and Intermediate	Atypical Mitis and Intermediate	Total
No. of cases	5 (5.7%)	66 (75.8%)	4 (4.5%)	4 (4.5%)	3 (3.4%)	3 (3.4%)	1 (1.0%)	1 (1.0%)	87
No. of cultures from cases	7 (5.5%)	97 (76.3%)	4 (5.0%)	4 (3.1%)	5 (3.9%)	5 (3.9%)	3 (2.3%)	2 (1.5%)	127
No. of carriers	0	17 (77.2%)	1 (4.5%)	2 (9.0%)	2 (9.0%)	0	0	0	22
No. of cultures from carriers	0	28 (80.0%)	1 (2.8%)	2 (5.0%)	4 (11.4%)	0	0	0	35

gravis type predominates (Leeds, Hull and Berlin), and conversely the incidence of the gravis type is low in those communities having a mild type of diphtheria (Dundee and Glasgow). While the percentage incidencce of the various types found in Illinois differs from the incidence reported in the various cities in England, Scotland and in Berlin, it most closely approaches the incidence of types found in Glasgow where a mild form of diphtheria is prevalent. Robinson and Marshall[3] have found that in Manchester the percentage incidence of the various types is subject to change at different periods of the year, the fluctuations being chiefly within the gravis and intermediate groups. Due to the short time interval covered by our study and the comparatively small number of strains isolated, we have made no attempt to determine any fluctuations in the incidence of types which may occur in this state during various periods of the year.

Stability of Types.—The first serious setback to the conclusions of Anderson and his co-workers was brought out in the report of Menton[4] in 1932. This worker stated that in his experience the gravis, mitis and intermediate types were not stable in their colonial or biochemical characteristics. He, therefore, concluded that there was no valid basis for attempting to correlate the type of the organisms with the clinical severity of the case. Fundamental as this point is in accepting Anderson's conclusions, it has not yet been definitely settled, for while several workers (Anderson et al,[5] Carter[8] and Murray[7]) have been unable to essentially alter the original morphology and biochemical characteristics of the various types by drastic *in vivo* and *in vitro* laboratory manipulations, others (Menton,[4] Christison,[8] Menton et al[9] and Wright and Rankin[10]) have found inconsistencies in the morphological and biochemical characteristics of the different groups, changes in type on repeated cultures from cases, large numbers of atypical strains and mixed cultures, or dissociation *in vitro* and *in vivo*.

In order to determine the stability of the va-

TABLE 2. INCIDENCE OF BACTERIAL TYPES*

Area	No. of Cases	Gravis	Mitis	Intermediate	Atypical	Mixed
Manchester	542	129 (23.8%)	104 (19.2%)	296 (54.6%)	8 (1.5%)	5 (0.9%)
Leeds	668	518 (77.5%)	113 (17.0%)	37 (5.5%)		
Hull	310	184 (59.4%)	27 (8.7%)	90 (29.0%)	7 (2.3%)	2 (0.6%)
Dundee	107	4 (3.7%)	42 (39.3%)	61 (57.0%)		
Glasgow	160	3 (1.9%)	23 (14.4%)	115 (71.8%)	19 (11.9%)	
Berlin	46	20 (43.5%)	14 (30.4%)	10 (21.7%)	2 (4.4%)	
Illinois	87	5 (5.7%)	4 (4.5%)	66 (75.8%)	4 (4.5%)	8 (9.2%)
Total	1,920	863 (44.9%)	327 (11.8%)	675 (35.1%)	40 (2.0%)	15 (0.7%)

*A modification of the table by Robinson, D. T., and Marshall, F. N. Jour. Path. and Bact., 37: 76, 1934.

TABLE 3. CONSTANCY OF TYPES OF DIPHTHERIA BACILLI ON REPEATED CULTURES FROM CARRIERS AND CASES

	Number of Cultures Taken				
	2	3	4	9	Total
No. of cases and carriers	17	8	4	1	30
No. of cases and carriers in which type remained constant	13 (76.5%)	6 (75.0%)	4 (100.0%)	1 (100.0%)	24 (80.0%)
No. of cases and carriers in which type changed	4 (23.5%)	2 (25.0%)	0	0	6 (20.0%)
Approximate No. of days between taking cultures	7–10	4–10	2–5	2–4	

rious types of organisms which we isolated from cases and carriers in which two or more cultures had been taken, our results were analyzed to detect any change in type during the repeated cultures.

Table 3 shows the results of analyzing the types of cultures obtained on repeated (2, 3, 4, and 9 cultures) examinations of 30 cases and carriers. It will be noted from the percentages of the total number of cultures than in 80% of the cases and carriers the type of organism remained unchanged, while 20% of the cases and carriers showed a change from one type to another on repeated culture. This changing of type has not been thoroughly investigated by previous investigators. Anderson et al[5] found that 8 out of 17 convalescent cases in a fever hospital showed a change in type on repeated examinations, but they found no change in type when the cultures were taken at intervals of less than 30 days. They attributed this apparent change in type to a superimposed infection from other patients in the hospital harboring another type of the organism. In support of the above contention they cited four cases isolated at home in which no change in type was detected. None of the cases and carriers in our series showing a change in type had been hospitalized, as far as we can tell from our records, and time intervals when cultures were taken were all less than 30 days. We do not believe that the finding of different types upon repeated culture necessarily indicates a *change of type in vivo,* for it is quite possible that in streaking out the successive cultures on the plates some types may be missed if they are few in number. It may be noted at this point that no particular difficulty was experienced in classifying the various types of colonies on the chocolate-tellurite medium. While no systematic study of the stability of the various types *in vitro* was carried out, it was our usual experience that cultures maintained on Loeffler's medium in the ice box for periods of several months retained their original colonial morphology when plated out at various intervals. Intradermal virulence tests on guinea pigs indicated that, in keeping with the results of others, the various types showed little difference in their virulence for these animals. The results of the starch fermentation tests are not complete enough to be reported at this time.

It may be objected that since several workers have pointed out that colony morphology is unstable and frequently inconsistent with the accepted biochemical characteristics, a classification such as we have made based on colonial morphology alone is untenable. However, since one of us (T. C. G.)[11] several years ago made a thorough study of the stability of the colonies of the diphtheria bacillus and found them extremely difficult to dissociate, and since Christison[8] was one of the first to describe the instability of the gravis, mitis and intermediate colonies and yet in her most recent publications she[12] and her associates[13] made colony morphology the primary method of classifying the various types to be correlated with the clinical severity of the cases, we feel justified in using colony morphology as our sole method of classification.

Correlation of Colony Type with the Clinical Severity of the Case. Anderson et al[1] reported that the gravis type of the diphtheria bacillus was usually associated with the more severe cases of diphtheria, and that these cases did not respond favorably to even large doses of antitoxin. On the other hand the cases from which the mitis organism was isolated were usually mild and responded well to the usual doses of antitoxin. In their second publication Anderson and his co-workers[5] stated that the intermediate strains were also frequently associated with the severe, paralytic cases of diphtheria.

Subsequent studies have shown that Ander-

son's conclusions do not necessarily hold true in localities outside of Leeds. For example, Menton et al[9] found that 15.8% of the severe cases in Staffordshire were caused by mitis strains. Carter[6] found that in Glasgow both the mitis and the intermediate strains caused the severe cases, while the gravis cases were mild. Parish et al[14] isolated the gravis organism from approximately 50% of their cases regardless of the clinical severity. On the other hand several workers (Leete et al[15] in Hull, Wright et al[13] in Edinburgh, Clauberg[16] in Berlin and Robinson and Marshall[3] in Manchester) corroborated Anderson's contention that the severe, serum intractable cases were caused by the gravis and frequently the intermediate strains, while the mild cases, readily amenable to serum therapy, were caused by the mitis strains.

These divergent results regarding the correlation of types of the diphtheria organisms with the clinical severity of the disease, suggest that the correlation may be only a local phenomenon; or, as may be inferred from the studies of Ewing,[17] that only gravis strains in a particular serological group are capable of causing severe cases of the disease.

Inasmuch as no systematic study attempting to correlate the clinical severity of diphtheria with the type of the causative organism has been published in this country, we believed it of interest to make such a study in this state. Questionnaires were sent to each of the attending physicians who had submitted positive nose and throat swabs during the past six months, requesting information regarding location of the false membrane, temperatures, amount of antitoxin injected, response to antitoxin, complications, post diphtheretic paralysis and termination. The majority of the physicians kindly responded to this request and we wish to take this opportunity to thank them for their cooperation.**

Classification of Cases on the Basis of Clinical Severity. It is admittedly difficult to classify cases of diphtheria accurately in regard to clinical severity on the basis of the information obtained from the returned questionnaires. However, by grouping certain clinical conditions and type of treatment as shown in the following table, we believe our classification of mild, moderately severe and severe cases is sufficiently accurate for the purposes of this investigation.

In general cases were assigned to a given group if they presented two or more of the conditions in that group. Few of the cases presented all the conditions in the group to which they were assigned. It may be noted in passing that the amount of antitoxin given is not necessarily a reliable index of the severity of the case since there is always the possibility that more than the necessary amount of antitoxin was given. The use of intravenous injections of 10% dextrose was confined to those cases treated in the Chicago Municipal Contagious Disease Hospital and, as the table indicates, was only resorted to in the more severe cases.

Types of Diphtheria Bacilli Isolated from Mild, Moderately Severe and Severe Cases. A total of 57 questionnaires were received out of 87 sent to the attending physicians. Based on the clinical information in these questionnaires each case was designated as mild, moderately severe or severe, as previously described. The clinical severity of each case was correlated with the type or types of organisms isolated from

TABLE 4. CRITERIA FOR ESTIMATING THE CLINICAL SEVERITY OF DIPHTHERIA CASES

Clinical Condition and Treatment	Mild Case	Moderately Severe Case	Severe Case
Location and Extent of Membrane	Moderately Extensive Membrane in Pharynx or Nasal Cavity	Extensive Membrane in Pharynx or Nasal Cavity	Membrane Extending to Larynx
Complications	None	Rare	Frequent
Post Diphtheretic Paralysis	None	Rare	Frequent
Units of Antitoxin Given	Up to 30,000 Units	40,000 to 60,000 Units	More Than 60,000 Units
Response to Antitoxin	Good	Good or Fair	Poor
Intravenous Injections of Dextrose	None	Frequent	Usual

the case. The results of this correlation are shown in the following table.

TABLE 5. CORRELATION OF THE CLINICAL SEVERITY OF CASES WITH TYPE OF ORGANISM ISOLATED

Type of Organism Isolated	Clinical Classification			Total
	Mild	Moderately Severe	Severe	
Gravis	2 (100.0%)	0	0	2
Intermediate	33 (68.7%)	11 (23.0%)	4 (8.3%)	48
Mitis	1 (100.0%)	0	0	1
Atypical	2 (100.0%)	0	0	2
Mixed Types:				
*(M & I)	2 (50.0%)	1 (25.0%)	0	3
*(A, M & I)	1 (25.0%)	0	0	
Total	41 (72.0%)	12 (21.0%)	4 (7.0%)	57

*M—Mitis. G—Gravis. I—Intermediate. A—Atypical.

It will be noted at once that the intermediate strains caused the majority of the mild, moderately severe and severe cases. The two gravis cases were both mild. There was but one mitis case which was also mild. Most of the atypical and mixed cultures caused a mild form of the disease.

The number of cases is probably too small to form the basis for any definite conclusions. But from the information at hand we can at least state that the severe or even moderately severe cases are not associated with the gravis strains. If we take these findings as an indication of the general severity of diphtheria in Illinois at the present time, we may state that the severe form of the disease, as it exists in England and Germany where the use of 150,000 to 200,000 units of antitoxin per case is not uncommon, does not exist in this state. If, as this study would indicate, only mild or moderately severe cases of diphtheria are occurring at the present time in this state, then our findings agree with those of Carter[6] in Glasgow and Murray[18] in Dundee where a mild form of the disease prevails and the gravis strains are apparently not associated with the severe cases. With but few exceptions the response to antitoxin was good in our series of cases—another indication that we are not dealing with the same severe clinical form of the disease as found in England and Germany.

Since but one death was reported in our series of 57 cases, we will briefly outline the course of the case.

J. H., male, white, aged 13½ years. Admitted on the 4th day of the disease to the hospital. Temperature was 105.8° F and 40,000 units of antitoxin were given intramuscularly. An extensive membrane necessitated intubation. A total of 4 litres of 10 per cent. dextrose were injected intravenously during the course of the disease. Response to antitoxin was poor, the temperature remaining high up to the time of death, when it was 102.2°, five days after admission. Complications of toxic myocarditis and bronchopneumonia developed. An intermediate strain was isolated from this case.

This case probably represents the severe, serum intractable form of the disease prevalent in many parts of England and Germany.

Discussion. The results of this investigation substantiate the growing conception that the percentage incidence of the gravis, mitis and intermediate types of the diphtheria bacillus may vary greatly in different localities. It also seems apparent from the work of others and our own results that where the prevailing type of diphtheria is mild in character, the incidence of the gravis strain is low and it is not associated with severe cases of the disease. These results do not directly oppose the conclusions of Anderson but rather conform with the views of the Leeds workers modified to some extent by the subsequent work of others who have investigated the problem.

CONCLUSIONS

1. Of the 162 strains of *C. diphtheriae* isolated from 109 cases and carriers, 5.5% were gravis, 78% intermediate, 2.9% mitis and 4% atypical strains, based on their colonial morphology on chocolate-tellurite agar. Two or more types of organisms were found in approximately 9% of the cases and carriers.

2. Repeated cultures from 30 cases and carriers showed that the original type was recovered at each of 2, 3, 4 or 9 repeated examinations in 80% of the cases and carriers. A change of type on repeated examination occurred in 20% of the cases or carriers.

3. Correlation of the type of organisms isolated with the clinical severity of the case indicated that the majority of the mild, moderately severe and severe cases were caused by the intermediate strains. Gravis strains were not

isolated from any of the severe or moderately severe cases.

**We are especially indebted to Dr. Archibald L. Hoyne of the Chicago Municipal Contagious Disease Hospital for sending us cultures and allowing us to consult the clinical histories of many cases.

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DISCUSSION

Dr. Perry J. Melnick, Decatur: My chief interest is in the field of pathologic anatomy, so that I am scarcely qualified to discuss the technical details of this paper. Diphtheria is still a problem in spite of antitoxin and the Schick test and even in spite of toxoid. Clinicians are familiar with the occasional case of diphtheria that develops in the child who has received toxoid. Pathologists are impressed with the variations in the anatomic picture at autopsy. One type of the case may have a small or almost an insignificant membrane and the anatomic picture be that of a very severe sepsis. Another type may have a very extensive membrane and yet very little sepsis and the patient die of some mechanical cause, such as obstruction of the larynx, or of bronchopneumonia. And there is a third type of case, a type in which the patient apparently recovers from the disease and several weeks later dies suddenly, and at autopsy we find an interstitial myocarditis characterized by an infiltration of eosinophilic leukocytes.

Bacteriologists know that the diphtheria bacillus varies a great deal in its morphology. The variation in morphology can not be reliably correlated with the virulence. One strain of bacilli will produce a powerful toxin and another strain, identical in morphology with the first, will produce very little or even no toxin. Of course, the virulence depends not only on the toxin production but on the ability of the organism to invade the mucous membrane. Diphtheria carriers may not suffer from the disease and yet carry organisms which produce a powerful toxin. That leads to the factor of the resistance of the host—that is, the ability of the host to produce antitoxin and bactericidal substances.

That Dr. Shaughnessy and Dr. Grubb are well aware of these puzzles is evidenced by this piece of work in which they attacked the problem from a new angle, the colony morphology. I want to congratulate them on this excellent paper.

Dr. Lloyd Arnold, Chicago: Dr. Grubb mentioned the serological classification of the diphtheria bacillus. I wonder, in these three types, whether there is any difference in the toxin production. Not only that, but has anything been done as to the ability of those toxins in the three strains to produce antitoxins or anti-bodies in animals. Has it been put to an experimental test? The gravis strain, isolated in a number of severe cases, as Anderson did; don't they produce more powerful toxins than do those toxins produce anti-bodies in laboratory animals?

Dr. Thomas C. Grubb (in closing): Regarding Dr. Arnold's question, there has been a study made of the toxigenicity of the various types of organisms, and it has been found that apparently the three types, the gravis, intermediate and mitis, produce the same type of toxin. It has been stated in the literature that the mitis type of organism produces a toxin of a higher Lf value than the other types. The chief difference seems to be that the gravis type of organism produces its toxin much more rapidly and is much more invasive than the other types.

As to Dr. Arnold's question regarding any difference among the various types in their ability to stimulate the production of antitoxin, I do not recall any statements in the literature as to whether one is more antigenic than the other in producing a higher concentration of antitoxin. I do not recall any work off-hand along that line.

Is it not true that perhaps in these cases of very severe diphtheria, the case is severe because antitoxin was administered late in the course of the disease, and not necessarily because the disease happens to be produced by a particular type of organism? I think this is a very logical question to ask, but there have been few studies made along that line. Robinson and Marshall stated that the time interval between the onset of the disease and the administration of antitoxin is not important in determining the outcome of the disease; that is, they found in cases caused by the mitis organism, if the antitoxin was injected one day later than the cases caused by the gravis and intermediate, that the outcome of the mitis case was still favorable, whereas in the gravis and intermediate cases they were very frequently fatal.

Another group of workers in England, Wright et al. for instance, state that the time interval between the onset of the disease and the administration of antitoxin is a very important factor in determining the outcome of the disease irrespective of the type of organism isolated from the case. Evidently this question is not yet settled.

PUBLIC HEALTH PROBLEMS OF SOUTHERN ILLINOIS

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Very striking improvement has been observed in the control over preventable diseases in Illinois during the last quarter of a century and particularly during the last decade. Unfortunately, advancement in that direction has not been uniform throughout the State. Some areas have succeeded in taking advantage of preventive medicine to a reasonably satisfactory degree. Others have made little or no progress in that respect. Most of the communities in the southern part of the State have been noticeably slow in organizing and developing programs of sanitation and hygiene. The influence of this variation in aggressiveness toward the adoption of public health service is reflected in morbidity and mortality rates among the populations concerned.

Southern Illinois may be said roughly to include thirty-four counties which embrace a little less than one million people, about one-eighth of the population of the State. Practically all of the statistical data which are ordinarily accepted as an index to prevailing health conditions betray an unfavorable situation in the southern area compared with the remainder of the State. This is true for most of the communicable diseases regardless of whether or not Chicago is included in the comparative study. Typhoid fever, for example, has killed more people in southern Illinois during the last decade than in all the remainder of the State, 705 out of a total of 1,397 fatalities in Illinois. For the southern section the average annual mortality rate from typhoid fever for the ten years was 7 per 100,000 population against a State-wide rate of 2. This unfavorable difference in rate was responsible for a relative excess of 500 deaths and upwards of 5,000 cases of illness in the thirty-four southern counties during the decade.

The death rate from infantile diarrhea and enteritis in the southern area is more than double that for the State at large. For the last six years these conditions in babies under two years of age have been responsible for an annual mortality rate of 23 against a State rate of only 9 per 100,000 population. Expressed in more striking terms, considerably over one-quarter of all deaths from infantile diarrhea during the last six years in Illinois have occurred among somewhat less than one-eighth of the population which inhabits the southern portion of the State. Had the loss in the southern area been at the same rate which prevailed in the remainder of the State, the number of deaths would have been about 300 instead of 1,331.

Diphtheria has caused losses in much the same proportions. For the last five years the mortality rate in southern Illinois from this disease has been somewhat more than twice that for the remainder of the State, 5.9 and 2.5, respectively. This unfavorable differencce represents a comparatively excessive loss of some 130 lives and a relative excess of approximately 1,500 cases.

Tuberculosis is substantially more prevalent in the southern area than elsewhere in the State with the exception of Chicago. For the last decade the mortality rate from this disease has averaged 65 per 100,000 people in the southern section against 58 in the remainder of the State exclusive of Chicago. With Cook County eliminated from consideration, the annual rate for the remainder of the State was only 50, indicating a very decidedly unfavorable situation in the south, amounting to an excess loss of about 150 lives annually.

Whooping cough likewise has caused relatively excessive losses in the southern counties. For the last seven years the average annual mortality rate from this disease was 6.2 in the southern area compared with 2.8 in the State at large. Substantially more than one-fourth of all mortality from whooping cough in Illinois since 1927 took placce in the southern section. Had the rate been no higher in this area than elsewhere in the State, there would have been only 200 instead of 485 fatalities from the disease in that area.

Malaria and trachoma constitute a public health problem of considerable magnitude in Illinois which is confined almost entirely to the southern zone. While neither is responsible for much mortality, both tend to destroy the spirit and create no end of economic mischief in individual and community life. Both diseases are

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preventable. Lack of sanitation is a dominant factor in the spread and perpetuation of both. No accurate records on the prevalence of either are available. Reports, however, show that 8933 cases of trachoma were detected by special workers during the twelve months ended with June 18, 1935. It may safely be said that the number infected with malaria runs well into the thousands.

Infant mortality is sharply higher in the southern area than anywhere else in the State. During the last decade an average of 72 per 1,000 babies born failed to survive the first year of life in that section compared with only 56 in the remainder of the population. This unfavorable difference in rate indicates a comparative excess loss of 2,500 babies, an average of 250 annually.

The foregoing observations, based on records of the State Department of Public Health, show unmistakably that the people of southern Illinois are burdened with a disproportionately heavy loss from communicable diseases. Fully 450 more inhabitants of southern Illinois die annually from typhoid fever, infantile diarrhea, diphtheria, tuberculosis and whooping cough than would be the case if mortality rates were no higher than elsewhere in the State. The incidence of illness from these diseases is, of course, proportionately high, aggregating between 4,000 and 5,000 more cases annually than would be experienced under conditions comparable with those further north.

The reasons for the impressively unfavorable communicable disease situation in southern Illinois warrant careful study. They can scarcely be attributed to the racial characteristics of the people. The population is predominantly native white. Only seven of the thirty-four counties have a significant Negro element and in only three does the Negro inhabitants exceed 10 per cent of the population.

The excessively high communicable disease rates cannot be attributed justifiably to the quality of medical service in the area. A report in the ILLINOIS MEDICAL JOURNAL[2] of a study made by the State Department of Public Health shows that mortality rates from diabetes, appendicitis and chronic nephritis, three non-communicable diseases which require an exacting degree of medical skill and knowledge to successfully diagnose and treat, are actually lower in southern Illinois than in either the central or northern portions of the State. Other reports show that the number of specimens sent from the southern counties to the State diagnostic laboratories for examination is fully as high in proportion to the population as from any other area of the State. These observations indicate that the medical profession is as alert, active and competent as elsewhere. One must look to some other source for the fundamental cause of the unfavorable public health situation.

Climate and topography are probably factors of some importance with respect to three or four diseases. The relatively long summer season and a considerable area of swampy lowland undoubtedly favor mosquito and fly breeding. Mosquitos are responsible for the malaria while flies play a part in the spread of typhoid fever and infantile diarrhea. Poor drainage may favor the contamination of water supplies and in that way contribute to the spread of typhoid fever.

These factcors are probably secondary, however, to the lack of organized public health facilities which, if available, could be utilized to promote sanitation and the practice of preventive medicine. A fairly good index to public health facilities in a territory is the number of public health nurses employed. Records of the State Department of Public Health show that only 45 nurses are now engaged in public health work throughout all of southern Illinois and that 21 of the 34 counties have no public health nurses. Of the 45 nurses in this area, 15 are employed in Madison and 15 in St. Clair Counties, leaving only 15 for all the other 32 counties with 600,000 people. Exclusive of Cook County, there are 264 public health nurses at work elsewhere in the State. For the southern section there are only 5 public health nurses for each 100,000 people while for the remainder of the State, exclusive of Cook County, there are 10. A total of 44 counties in the State have no public health nursing service and 21 of these are in the southern section.

With tuberculosis sanatoria the situation is much the same. Madison is the only County in the southern tier which maintains a public

sanatorium while elsewhere in the State there are 16 county and 3 municipal public sanatoria. A total of 44 counties levy a special tax under the Glakin law with which to raise funds officially for anti-tuberculosis work but only 4 of those counties are in the southern group. Income from the annual sale of Christmas seals has averaged in recent years over 2 cents per capita for the State population exclusive of Cook County. For the southern counties it has been considerably less than 1 cent per capita. Excluding Madison, Marion and St. Clair Counties, it appears that the income from Christmas seal sales is less than $4,000 annually in the southern area, an almost insignificant fund for upwards of half a million people.

In common with the remainder of the State there are no organized county health departments in southern Illinois. None of the municipalities have full time medical health officers. Only a few of those communities where physicans act as health officers on a part time basis have any public health nurses. In short, there is an almost universal shortage of organized, official local facilities through which to apply preventive medicine in the southern section of Illinois. With the exception of three or four counties, this conclusion is the inevitable answer to whatever method of measurement is employed in appraising the situation.

From this review of prevailing conditions in southern Illnois, the magnitude and character of the public health problems are clearly revealed. Communicable diseases cause excessive losses, on the one hand, while public health facilities are insufficient to meet adequately the most elementary requirements of preventive medicine. Sanitation is much below the standard for modern society. Health education in the fundamentals of hygiene, such as dietary needs, personal cleanliness, sanitation of milk, food and water has not filtered down into the masses of the people.

I believe that it is now generally recognized by the medical profession and by public health authorities that excessively high prevalence rates of communicable disease may be properly regarded as symptoms of more fundamental deficiencies in basic health requirements. It is more than probable, for example, that undernutrition flourishes in communities which do not take advantage of the simpler preventive procedures such as inoculation and sanitary supervision over water, milk and food. Adequate feeding is perhaps more fundamental than any other factor in the promotion and maintenance of good health. This was emphasized in the inaugural address of Dr. James S. McLester when he assumed the office of president of the American Medical Association last year at Atlantic City.

Acceptance of this dictum compels one to believe that many children in southern Illinois, as well as elsewhere in the State, are destined to reach adulthood with serious developmental deficiencies because of unbalanced and inadequate diet and because of a neglect of remedial physical defects. An impressive illustration of what may take place is found in a report[8] by Lt. H. D. Templeton of the Medical Corps of the United States Navy. While acting as medical examiner at the Navy recruiting station in Indianapolis, he was compelled to turn down because of physical defects 623 out of 881 applicants for enlistment. From this experience Dr. Templeton concluded that:

"This survey suggests that periodic physical examinations of school children might have resulted in the correction of many nutritional and developmental defects."

While the physical standards for the Navy are undoubtedly high, the requirements for satisfactory, efficient civil life are no less exacting.

It may be concluded, therefore, that the fundamental habits and practices that influence health are susceptible to much improvement. This may be accepted as one of the pressing public health problems in southern Illinois although it is by no means confined to that area.

The remedy needed to improve the communicable disease situation in southern Illinois is perfectly clear to any student of public health administration. Organized local health departments manned by an adequate staff of properly trained personnel available for full time duty are necessary to solve the problem. This conclusion is based upon observation of the experiences in southern Illinois and upon reports from other localities.

It must not be assumed that nothing has been attempted and nothing accomplished for the

public health in southern Illinois. Anti-typhoid fever programs have been undertaken with marked success in numerous localities. A majority of the susceptible population in several counties has been vaccinated against typhoid during the last few years.

A southern Illinois community, New Burnside Township in Johnson County, has the distinction of being the first in the State and one of the first in the nation to offer free inoculation against diphtheria to all children. That was done in 1923 when most of the children were inoculated and when this means of prevention was still new. Another southern County, Wabash, was perhaps the first in the State to carry out a successful county-wide diphtheria eradication campaign on a pay basis. Over 60 per cent of the school children were inoculated by family physicians in 1927 as a result of the campaign.

Numerous other similar illustrations might be cited. The difficulty has been a lack of continuity and permanency of these programs. Activities of this type have been sporadic in point of time as well as geography. They have been limited usually to one disease. While the rates from most of the communicable diseases have declined, the improvement has been slower than elsewhere and has not kept pace with the advancement of preventive medicine. No broad, comprehensive public health programs have been established on a firm, permanent basis.

The reason is largely economic. The illustrations of sporadic achievements are evidence of public appreciation for the advantages offered by preventive medicine. The difficulty is in financing a program.

The probability of paying for reasonably adequate public health programs from local resources in those counties most in need thereof is remote. These areas are largely rural and the per capita income is low. Consequently the promise of building up a satisfactory public health service in southern Illinois depends in no small measure upon the possibilities of State or federal assistance. On this point Winslow has said:[4]

"There are two facts we have not faced in this country. The first is that the rural district needs just as much and more health machinery than the urban dis-

MORTALITY—ILLINOIS BY SECTIONS
TEN YEARS 1926-1935

Section	Counties	Population 1934	Typhoid Fever Deaths*	Typhoid Fever Rate*	Tuberculosis Deaths*	Tuberculosis Rate*	Diphtheria Deaths*	Diphtheria Rate*
Northern	33	5,702,208	404	0.75	35,648	65.4	3,213	6.13
Ex. Cook	32	1,561,308	207	1.3	7,677	48.4	491	3.0
Ex. Chicago	..	2,211,508	225	1.02	12,840	61.2	725	3.5
Central	35	1,151,347	288	2.5	5,911	51.5	404	3.4
Southern	34	986,485	705	6.95	6,370	65.0	502	4.9
State	102	7,876,000	1,397	1.9	47,929	63.3	4,119	5.5

*Deaths are total for decade but rates are annual average per 100,000 population.

Sections	Whooping Cough 1928-1935 Deaths*	Whooping Cough 1928-1935 Rate*	Diarrhea Under 2 Years 1929-1934 Deaths*	Diarrhea Under 2 Years 1929-1934 Rate*	Infant Mortality 1926-1934 Deaths*	Infant Mortality 1926-1934 Rate**
Northern	905	2.02	2,365	6.97	43,608	55.7
Ex. Cook	316	2.57	635	6.94	11,584	55.7
Ex. Chicago	387	2.3	831	6.3	15,361	53.9
Central	368	4.0	698	10.0	10,332	59.95
Southern	485	6.2	1,331	22.5	11,323	72.1
State	1,758	2.8	4,394	9.4	65,263	58.8

*Deaths are total for periods indicated but rates are annual average per 100,000 population.
**This rate is per 1,000 births.

PUBLIC HEALTH FACILITIES EXCLUSIVE
OF COOK COUNTY

Section	Public Health Nurses Number	Public Health Nurses Per 100,000	Tuberculosis Sanatoria Number	Tuberculosis Sanatoria Beds	Tuberculosis Tax Counties
Northern	171	11	9	622	18
Central	93	8	7	343	19
Southern	45	4½	1	90	4
State	309	10	17	1,055	41

trict of the same size. I have no patience with the compromises that have been made by many writers in this thing in the past in talking about health budgets of $10,000 as being adequate for 20,000 people in the country. It is all nonsense. The rural dweller needs every bit as much service and it costs more to give it to him because of the distance. Let's face that fairly and squarely.

"The second point we have to face is that the rural district cannot pay for any such service. That always we have to recognize and the answer, of course, is that the cost must be distributed in some way and borne by the urban districts and the rest of the state. I think there is no escape from that conclusion. We recognize it in road building and education. We have to recognize it in health. At any rate, we must study this problem of rural health service and finances and not dodge the question by pretending because the small district cannot pay for good health service that it does not need it. Because that is not true."

The situation in southern Illinois constitutes a distinct challenge to the public health agencies of the State. The most promising possibility of meeting that challenge successfully in the near future is through the plan offered by the United States Public Health Service. Funds are available from that source to meet just such needs as those of southern Illinois. To the U. S. Public Health Service has been appropriated an annual fund of $8,000,000 for allocation among the several States. Illinois should be entitled to more than $400,000 per year from that fund. The primary purpose for which this money was appropriated is to build up and strengthen public health services in rural districts. Local agencies may obtain these funds, however, only through the State Department of Public Health.

I have described the problem and suggested what seems to be a practicable solution. Cooperative effort between State health authorities and local officials is needed to meet the challenge.

REFERENCE

1. Ill. Med Jour., March, 1936.
2. Ibid, February, 1935.
3. U. S. Naval Medical Bulletin, January, 1936.
4. Ill. Health News, December, 1928.
5. Statistical Bulletin 58, Ill. State Dept. of Public Health.
6. Various annual reports and periodicals of the Illinois State Department of Public Health.

DISCUSSION

Dr. J. J. McShane, Springfield: Dr. Montgomery is to be congratulated on his paper. The topic of Public Health Problems of Southern Illinois has been covered so well that there need be but little discussion. However, there are several points in Dr. Montgomery's paper that I should like to discuss briefly.

First, regarding the problems of typhoid fever and the mortality of typhoid fever in southern Illinois. Dr. Montgomery stated that during the last decade a total of 705 deaths out of a total of 1397 cases occurred in southern Illinois, that is in the 34 southern counties, and the mortality rate of typhoid fever in the last ten years was seven per 100,000, as against the state-wide rate of two. Typhoid fever has always been a difficult problem in southern Illinois and I know that both the morbidity and the mortality can be reduced by immunization and a better sanitation program of water, food and sewage. However, as doctor stated, we must not think that the doctors in southern Illinois are not attempting to control typhoid fever, for the proof of my statement is that a large number of persons in this area have been immunized against typhoid fever and diphtheria in the last three years.

The following counties in southern Illinois have put on an intensive immunization program against typhoid fever and diphtheria, as is attested by the following percentages for the period of 1932 to 1935.

TYPHOID FEVER

Union County	26.42	Williamson County	24.10
Johnson County	23.10	Hamilton County	47.99
Alexander County	43.60	White County	29.39
Pope County	34.60	Wayne County	40.03
Hardin County	47.60	Jackson County	14.80
Gallatin County	49.39	Pulaski County	14.70
Saline County	35.79	Lawrence County	14.09

DIPHTHERIA

Alexander County	14.65	Hamilton County	10.65
Pope County	17.65	White County	17.01
Hardin County	29.60	Wayne County	11.28
Gallatin County	21.30	Edwards County	11.62
Saline County	14.20	Richland County	10.01
Williamson County	10.01	Wabash County	9.46
Jackson County	16.01	Clinton County	9.84
Franklin County	17.79		

The physicians and the nurses too in these counties are to be complimented on the number of persons that are being immunized against both typhoid fever and diphtheria. This does not mean that immunization programs have not been caried on in other southern counties but immunization has not been carried on as intensively as in the foregoing counties.

Tuberculosis is one of our big problems in southern Illinois and will always have a high morbidity and mortality rate until some plan can be worked out whereby the people living in this area can be given sanatorium care and the proper tuberculosis program initiated. We realize that long before the local or state health departments, or other groups, began intensive work in tuberculosis, that the tuberculosis morbidity and mortality began to improve, due to the fact that better housing, better living and better wages made this possible.

However, a decided reduction of the diseases that

have been mentioned by Dr. Montgomery will not be possible until there is a more adequate health service in this area and in other areas in our state. Such a local health service is denied many counties due to the lack of taxable wealth. There are 2,750 small health jurisdictions in Illinois—1,600 of these are township boards of health and 1,100 cities and villages, with approximately only 300 medical officers of health. The pay of most of these medical health officers is so small that many would be ashamed to mention the salary. Within the near future we hope that a state-wide program can be developed which will give the smaller cities and villages and the rural districts a health service, which at this time is not available.

As Dr. Montgomery has pointed out, there are only 45 nurses in public health work throughout the 34 counties in southern Illinois and 21 of these counties have no nurses. There are 30 nurses employed by St. Clair and Madison Counties, leaving only 15 nurses for the other 32 counties in this area. This is not as it should be and I am sure that within a short time this will be corrected whenever funds become available. We realize that we cannot control communicable diseases without an adequate health service, which of course means proper personnel, both medical officers of health and nurses, to assist in this work.

Dr. Lloyd Arnold, Chicago: This is a very interesting paper, and almost a landmark. In the last decade, health officers or part time health officers in the southern communities, in their zeal to make a living, did not take sufficient interest in public health and preventive medicine to actually grasp in the most comprehensible manner the health problems of the community. In the Public Health exhibit in the lobby yesterday afternoon I spent about an hour talking to various doctors who stopped by to look at it. Most of them were from the southern part of the State and a great many of them were rather resentful that, no matter what charts we showed relative to the disease incidence in Illinois, the southern part of the State always showed up the worst. Probably that period of our development has passed. From what we heard from Dr. Montgomery, the practicing physician and the local health officer in the southern part of the State recognizes his problem just as clearly as the Health Department recognizes his problem. I think from that standpoint this paper of Dr. Montgomery is really a landmark. It shows that the education in the southern part of the State by the State Department of Public Health, through its various activities, doesn't need to be carried on to the extent that it has been, and we need to change our tactics now to support the local opinion that is now developing in the southern part of the State. Most of these public health programs grow by certain stages of development, and the general educational stage seems to me now beginning to bear fruit. It is very encouraging to me to hear a health officer from a southern community describe in such a convincing and masterful manner his health problems and the way to solve them.

PNEUMOTHORAX FOR OUTPATIENTS

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For the purpose of this paper the term outpatients will comprise patients who are not admitted to a tuberculosis sanitarium or have been discharged from such an institution.

Artificial pneumothorax, instituted 40 years ago and brought to this country in 1912, inaugurated collapse therapy in tuberculosis and no form of treatment has shown such rapid development, so that now the technique and indications for its use are fairly established. Formerly 85% of the patients with open tuberculosis died within five years but since the adoption of this form of treatment the time-worn purely conservative regime of tuberculosis therapy has been revolutionized The professional resistance or inertia to this form of treatment persisted in this country until the World War drew the attention of the surgeons to the thorax as a field of work and now perhaps the most brilliant advancement in all surgery has been in collapse therapy of the lungs. The technique of pneumothorax is comparatively simple and the apparatus required is not expensive, ranging from an ordinary 100 cc syringe and home made manometer to completely assembled pieces of apparatus.

Up to the last few years its use was restricted to exceptional cases and only recently has its use been extended from a small percentage of cases with ideal indications to the point where it is to be considered in every patient that has been diagnosed as tuberculous.

A decade ago pneumothorax was used in only 3 to 5% of the cases, whereas in the past several years 50 to 75% of the cases received the benefit of this modern treatment proving that the days of watchful waiting and pure conservatism are relics of the past. Due to pleuritic adhesions pneumothorax is successful in less than half of all cases under the best conditions but with ordinary sanatorium care not more than 5% would have recovered. It is a safe procedure and with or without pneumolysis and phrenectomy affords the most satisfactory collapse of the diseased area and it can be abandoned at any time if the

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disease becomes active in the other lung or the patient's condition warrants.

Due to the successful treatment of advanced cases the tendency to induce collapse earlier and earlier in the disease has gained impetus, but there is a limit to be reached. Pulmonary tuberculosis will never become a surgical disease and unless cavitation or extensive ulceration is present the patient should be given the usual treatment first for a trial period under careful observation before using collapse therapy as an adjunct. In early cases with slight or moderate infiltration, with negative sputum, not much temperature and slow onset, rest and careful management with diligent observation should precede collapse therapy.

Lung collapse when successfully done quickly improves the patient's condition and ameliorates the symptoms, such as cough, temperature, anorexia and dyspnea.

Indications: The indications and contraindications for pneumothorax are now fairly well established. Ideal indications are extensive disease in one lung with little or no disease in the other, unilateral disease with cavitation, repeated or severe hemorrhages without the presence of serious disease in other organs or tuberculosis of other vulnerable organs, although the tendency now is to be more liberal in the interpretation of the formula, for even the presence of a small infiltration process in the contralateral lung is not a contraindication and often these infiltrations clear up more rapidly after the other lung has been collapsed. In selected cases the use of bilateral pneumothorax meets with considerable success. In the past we have often compromised too long with conservative treatment, permitting the formation of adhesions which later prevented induction of pneumothorax or allowed insufficient collapse. The procedure is not employed nearly so extensively as it should be, as too many suitable cases are on rest regime and remain so for too long a time, subjecting the patient to the dangers of hemorrhage and bronchogenic spread of the disease. Each case must be conducted individually, carefully judging the lung compression and need of compression by frequent fluoroscopy. No case should receive a refill without fluoroscopic observation immediately preceding the refill. A fluoroscopy after each refill is a worthwhile observation.

Considerable diversity of opinion exists as to its use in very early or minimal cases but with increasing study of this type of case no doubt the advantage of earlier and earlier use will be manifest. Earlier diagnosis of minimal cases with consequent observation will find many of these cases suitable for compression long before cavitation and extensive infiltration will occur, based on the theory of lung rest and immobilization.

Selection of cases: All cases are not suitable and extensive and intelligent study of each individual case is necessary to apply the proper treatment for the particular case. Even then, many cases considered absolutely unsuitable will give the best results and vice versa. A rough classification of types of cases can, however, be helpful.

A. Acute Progressive Cases. This type comes on suddenly due to the low resistance to infection and the progress of the disease is more rapid than healing can occur. Results may be good at first but sooner or later the walls break down, the disease spreads and the case terminates unfavorably.

B. Chronic Cases. These patients have more marked resistance with periods of progress of the disease and periods of healing with fibrosis. These cases often give a result under treatment that seemed impossible or improbable, even though the process may be extensive and pleural adhesions prevent complete collapse.

C. Moderately Advanced Cases. Most pneumothorax cases come under this classification and carefully supervised treatment for a reasonable time followed by pneumothorax will benefit a large percentage of these cases. Even though both lungs are involved and fibrosis is extensive, the patient should be given the benefit of collapse therapy. Even thick walled cavities, either large or small, can be collapsed, and the lung freed of pus, an advantage if thorocoplasty is to be performed later.

D. Hemorrhage Cases. The results in these cases, already a spectacular thing to patient and friends, is often most brilliant. 300 cc to 400 cc of air will produce astonishing results in stopping the blood and assuring the patient. It is best not to proceed with too much haste using too much air, or not knowing the condition of the pleura or the extent of the disease, we may produce more trouble than we originally had to battle. The air seems to have a selective action

on the softened caseous areas and a small amount of air may stop hemorrhage from a fairly large cavity. Hemorrhage cases are fairly acute usually and fibrosis is not marked, the cavity thin walled and collapse is easy. The air may be repeated every hour or several hours, with phrenectomy, until results are obtained. Common sense must be used.

E. Bilateral Cases. Involvement of both lungs is no contraindication, provided the lung on one side is fairly good. The correct procedure in these cases is very individualized and may require collapse of the more extensive side, or the more active side, or both sides when using it bilaterally. It is best to start it on one side first, allow time for compensatory adjustment of respiration and circulation, then close the other side.

F. Advanced Cases. While usually hopeless, all advanced cases should be given the chance with collapse. It cannot be foretold which ones will receive benefit and which not, but one case saved makes up for many unsuccessful attempts.

G. Spontaneous Pneumothorax Cases. Carefully, under x-ray and fluoroscope, convert it to an artificial case.

H. Positive Sputum Cases. These are always cases for pneumothorax, no matter how early or how minimal the lesion, and should be collapsed early before adhesions form which may prevent collapse later. It removes the patient as a source of contagion at once. The palliative effect on the early cases in causing realization of the seriousness of their condition is not to be overlooked.

I. Effusive Pleuritis. The fluid should be aspirated and replaced with air. Complete collapse is not always indicated but separation of the pleural walls is necessary to prevent adhesions.

Contraindications:

A. Acute Miliary Tuberculosis. These patients progress too rapidly for any treatment to be of use.

B. Fibroid Phthisis with Emphysema. Even in these cases the presence of a cavity that can be closed is favorable for an attempt.

C. Laryngeal or Intestinal Cases. These usually come under the same category as the military cases.

D. Cardiac and Renal Cases. Mild ones can be treated, severe ones are hopeless.

E. Age is a factor. Over 50 is not a favorable age.

F. Pregnancy, diabetes, pleural adhesions. May be contraindications in exceptional cases.

Home treatment of tuberculosis as a rule is not satisfactory for various reasons which for lack of space cannot be listed here and home care cannot supplant sanatorium care in any case of tuberculosis. However, there are not at present facilities for all patients with pulmonary tuberculosis, making it necessary to provide at least some treatment preliminary to sanatorium treatment or post sanatorium, or in selected cases provide adequate home treatment by collapse therapy as an economic solution of cases that cannot be admitted to sanatoria. With better training of doctors and nurses in tuberculosis and more intelligence and understanding of the problems involved on the part of the public the home treatment will loom larger in the future, for there are no deaths from tuberculosis but rather from the ignorance of it.

Role of General Hospitals. Since the home care of tuberculosis is as yet very unsatisfactory and sanatarium care is as yet unavailable to a large population, there is yet another avenue open to improvement in our treatment of the tuberculosis patient and that is the general hospital. Any general hospital that is properly built and conducted to care for general cases adequately should be able to treat tuberculosis and should be open for chest cases. General care with bed rest with subsequent collapse therapy can serve patients at least cost to the community with greatest good to the patient by giving early hospitalization, early closure of cavities, adequate care and control of open cases. Progress has been made in the fight against tuberculosis but victory is not complete until sanatorium or hospital care is made available for all active cases, about 700,000 in the U. S. with only 90,000 sanatorium beds available. At present there are about 70,000 vacant beds in hospitals and these could serve a very desperate need for tuberculosis patients for general care and collapse therapy.

Dr. Chas. Hatfield recently traced the history of attempts to interest general hospitals in this country in making separate provision for tuberculosis patients beginning with the activity of Dr. Laurence Flick in 1895, the Henry Phipps Institute in 1903, and the recommendations of the National Tuberculosis Association in 1913-

1916 and the American Hospital Association in 1921. At last reports there are 14,601 beds available for tuberculosis patients, which admitted 37,079 patients in 12 months and had 11,318 under treatment on the day of reporting. These figures show that general hospitals have become a vital factor in treatment of tuberculosis, probably due to the growing development of collapse therapy in all forms. There is need in most parts of the United States for education leading to a wider use of general hospitals for tuberculosis treatment. Collapse therapy makes this possible.

The per capita cost in Sanatoria is about $3000 per patient while in a general hospital it is only $700 to $1500 per patient, which, expressed conversely, means two beds available for the same cost. It also allows sanatorium beds to be liberated for special cases, isolation of chronic cases, children with adult type of tuberculosis and will supply beds in communities where no sanatoria are avaiable.

Dr. Hatfield states: "The practicability of the development of special tuberculosis departments in general hospitals has been fully established both by authoritative opinion and by practical experience."

Public Health Aspect. Pneumothorax allows positive sputum cases to be closed and terminates danger to contacts, and the real crusade against tuberculosis, conceived in recent years as pivoting on the control of the open case, must be conceded to be a most tremendous force in the control of the disease. If there were no other justification than the prevention of contact of the open case with the child that would be sufficient plea for increasing hospitalization and subsequent collapse therapy. The City of Chicago through the Municipal Tuberculosis Sanatorium is one of the leaders in dealing with the tuberculosis problem by pneumothorax therapy and in their Bulletin (1933-34 issue) outline a plan of tuberculosis control by pneumothorax therapy. Quoting from the report of the Peoria Municipal Tuberculosis Sanitorium for 1935 Dr. Pollack states: "Full advantage was taken of collapse therapy whenever such treatment was indicated. Through the application of artificial pneumothorax we were enabled to discharge with safety some of the patients by referring them for further treatments to the Pneumothorax clinic."

Conclusions: Pneumothorax for outpatients marks a distinct step forward in tuberculosis therapy and control. Early collapse therapy is a prime essential in treating tuberculosis in all stages and as a control factor in tuberculosis spread through open cases. It is a definite method for eliminating positive sputum cases as sources of infection.

Pulmonary tuberculosis in the early stages is best treated by rest under careful observation, preferably in a sanatorium. Collapse therapy should be used in early cases after careful application of general care has not stopped the progress of the disease. In moderately advanced cases the sooner it is instituted the better the degree of success.

Collapse therapy is not a routine measure to be applied to every case of pulmonary tuberculosis. Each individual case must be studied and observed to give the right treatment at the best time.

Pneumothorax should be considered in every case except the very lightest (if controlled by bed rest and general care) and completely hopeless ones. Evolution of pneumothorax therapy has resulted in its greatly increased applicability. Procedures now shown to be successful would have been thought extremely radical only a short time ago.

The early hospitalization of tuberculosis patients is still a serious problem and the trend toward treatment in general hospitals is a proper and logical solution for the control of the infection and treatment of the individual case and collapse therapy in the hands of trained phthisiologist done in general hospitals should make available to many patients, that now cannot be admitted to sanatoria, the chance of recovery. The providing of beds in general hospitals for convalescent cases would fill unoccupied space in general hospitals and release it for more patients in sanatoria, as well as reducing the cost per patient with tuberculosis. Pneumothorax makes it possible to treat more patients at home successfully thus relieving the strain on sanatoria, gives the patient earlier and more successful treatment, and makes it possible for their private physician to care for them instead of going to an institution, which is quite a factor in aiding recovery in many cases of tuberculosis.

DISCUSSION

Dr. Allan J. Hruby, Chicago: It is very interesting indeed to hear a man in general medicine read a paper on collapse therapy and do it in such a masterly way;

do it, in fact, in a way that would reflect credit on any of the men doing the work in our institution in Chicago.

It was in 1931, under Dr. Frederick Tice, the President of our Board of Directors, that the ambulatory clinic for the treatment of tuberculosis was instituted. The reason for the institution of an ambulatory clinic lay in the overcrowding of the public institutions in Chicago, Cook County and Chicagoland.

The Municipal Tuberculosis Sanitarium in 1931 had about 750 patients on the waiting list, patients that were getting progressively worse and dying before they could get an available bed in the institution. Prior to 1931 the Sanitarium clinics, as you know, served merely to keep the patient under observation and administer the ordinary symptomatic treatment.

We started field pneumothorax in a meager way. Prior to 1931 we had a small ambulatory clinic in connection with the Municipal Tuberculosis Sanitarium that took care of about 25 patients. At the end of 1931 the number had increased to 111 cases and at the present time, we have almost 1,000 patients receiving pneumothorax in this ambulatory clinic.

Dr. Meixner has mentioned some of the advantages of this ambulatory treatment. The first advantage is the individual betterment of the case, getting them out of bed earlier, back to work and into useful life in a much shorter period. The second advantage is the public health aspect incident to the exclusion of the bacillus from the sputum.

In our ambulatory clinic, 40% of the cases have been converted from positive to negative. At the Sanitarium proper, with other forms of collapse therapy available as well as pneumothorax, conversion from positive to negative has reached 60%. At the Sanitarium collapse therapy has had great economic value. It has accelerated the Sanitarium tempo to such an extent that we turn over the institutional population every year. In other words, Chicago through the medium of collapse has practically built another institution of equal annual capacity to the present one, namely, 1,250 beds.

As the last advantage, I must mention the great educational value to the tuberculous population and the fact that the problem has made Chicago collapse therapy conscious.

Another great point Dr. Meixner brought out was the place of the private hospital in the treatment of tuberculosis with pneumothorax and also the matter of the choice of operation. As seen by the charts, pneumothorax made the greatest gain at the Municipal Tuberculosis Sanitarium. Pneumothorax is possible of wide application owing to the fact that it can be handled readily in a private hospital. After two weeks' preliminary stay in the hospital the refills may be continued either in the outpatient department of the hospital or in the patient's home.

Next week, June 1, we are inviting the various medical superintendents and chiefs of staff and superintendents of the private hospitals to a luncheon at the Sanitarium to present this problem to them. We do so because we realize that the private physician, the general practitioner of medicine like Dr. Meixner, is the man in the front line trench in the fight against tuberculosis.

In concluding, Dr. Hruby referred to the Municipal Tuberculosis Sanitarium statistical charts which showed the advantages of the treatment. These advantages were listed as follows:

1. The clinical benefit of the treatment.
2. The percentage of conversions.
3. The low mortality of the operative procedures.
4. The marked increase at the Sanitarium of pneumothorax as compared with operative measures, showing pneumothorax as the procedure of preference.
5. The lowered tuberculosis mortality in Chicago in the last few years.

Dr. Fred M. Meixner, Peoria (in closing): I want again to call attention to the effect of pneumothorax on the prognosis. When you consider most of these cases were considered too far along for bed rest and hygienic treatment to do any good and then we reduced this mortality rate so tremendously by collapse therapy, the influence can certainly be appreciated on the prognosis.

I also want to call attention to the fact that it brings the history and treatment of tuberculosis back into the field of general medicine. For a long time tuberculosis has been taken out of the field of general medicine, and the physicians have sort of felt it no longer had a place in general medicine. Now pneumothorax and collapse therapy will again bring it back into that field. It will make the general practitioner again tuberculosis conscious and call his attention to the proper treatment of this very unnecessary cause of death.

I think pneumothorax is a better answer to the problem of state medicine in treating tuberculosis patients than building more sanitaria, and there is no question but the subsidization by the state of tuberculosis beds in general hospitals would be the thing that would serve the purpose better than building institutions where, as Dr. Hruby has said, the turnover at best can be so slow that the average patient in the rural communities and smaller towns does not get the benefit of adequate treatment.

I was looking at the chart in the exhibits and in 45 counties below Sangamon County there is one tuberculosis sanitarium and only three tuberculosis or chest departments in general hospitals, and those are in private hospitals. You can see the tremendous amount of work that can be done just in the southern part of the State of Illinois in making available collapse therapy, which is intelligent tuberculosis treatment, and the intelligent control of tuberculosis is made possible by this method of treatment.

A FEW SIMPLE RECOMMENDATIONS TO THE GENERAL PRACTITIONER IN HIS CARE OF ARTHRITICS

RALPH PEMBERTON, M. D.
PHILADELPHIA, PA.

A great need today in the field of arthritis is extension of sound information in an easily tangible way to the great mass of practitioners who first see the disease. What the general practitioner needs to know is not the subtleties which enter into controversial doctrines but the importance of a broad-gauged view which sees and seizes the problem as a whole, recognizes it as necessarily open to many influences and proceeds to bring these to bear cautiously but as completely as possible. There is no opportunity in this brief paper to discuss etiologic considerations and confession must be made at the outset that all the links in the chain between etiology and the end results of arthritis are not known. Many circumstantial facts are known, however, which permit of adumbrating the nature of the problem and of laying down principles of therapy of the first importance.

Arthritis is certainly not a disease of joints alone although these are conspicuously involved. It is a systemic disease and, by way of epigram, one can almost say that arthritis is no more a disease of joints than typhoid fever is a disease of Peyer's patches. Confession can therefore be made at the outset that, in the opinion of the writer at least, errors often inhere in the approach of some clinicians to the problem.

In common with most mental concepts, the notion of the nature of arthritis is determined by individual experience, such as the types of cases one sees and by the phases of the syndrome for which one looks. For example, observer A may see chiefly patients in whom the disease has run a devastating course, with the production of deformity as the most evident residual symptom. Such patients are to be seen in the wards of public institutions and the observer may incline not unnaturally to regard therapeutic measures as of limited avail. Again, another observer might easily believe, from an experience started at the autopsy table and finished at the microscope, that proliferation of the synovial membrane constitutes the only essential feature of atrophic arthritis and that degeneration of the articular cartilage constitutes the only essential feature of hypertrophic arthritis. Each of these observers would obviously fail to see the disease as a whole. This rough simile needs further elaboration but illustrates perhaps the difficulties inherent in the principle of the limited outlook.

Observers entertaining such viewpoints as the above become impressed with the significance of their observations and tend, not unnaturally, toward the exclusion of other considerations. Indeed, upon such premises, strong negative postulates arise which, in our present state of knowledge, are philosophically immature and clinically inadequate. There is, to the writer at least, a strong nucleus of truth in most well considered points of view relating to the disease. Few of these points of view are wholly irreconcilable, one with another. Controversy concerning them is, indeed, less important than is the duty of coordinating them into the best practicable whole so far as living arthritics are concerned.

The modern concept of arthritis starts with knowledge of the organic pathology of the articular tissues which divides the syndrome into the two types, atrophic and hypertrophic. This knowledge of the purely morphologic changes is important but, notwithstanding, it is of limited significance. There is no common agreement that the disease is primarily in these tissues and it is certainly not confined to them. Many persons belonging within the category of the rheumatoid syndrome go through life with little or no true arthritis. It is indeed possible to observe arthritis so obliquely as to regard it as a localized anatomico-pathologic curiosity and to miss appreciation of basic features that must precede this.

It is necessary in both types to accept the probability of undetermined factors. It is unnecessary, however, to make all of these factors radically different for the two groups. By the same token, much has been said and written regarding the different treatments necessary to the two types, atrophic and hypertrophic. I believe that much of this derives from *a priori* views as to what treatment should be on the basis of the interests of the observer. We are

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definitely not in a position to deny to either type the benefits from measures useful at times or frequently to the other type. This statement has particular relevance for the general practitioner in that it is doubtful whether he can be expected, for some time to come, to distinguish accurately between the two types; and, indeed, about thirteen per cent. of all cases offer great difficulties to any observer. At all events, it may be fairly said that the broad therapeutic generalizations to be outlined here offer no hazards to any arthritic when conducted compatibly with broad medical judgment.

The arthritic, in all except the early stages perhaps, may be ill in many ways. Few experienced clinicians would deny that the disease manifests itself, in part at least, in disturbances not only of the locomotor and muscular systems but also of the vascular and nervous systems. Some of the writer's patients have indeed had psycopathies which have led them to jump from the upper floor of an hotel. The cold hands of the atrophic arthritic are almost among the clinical landmarks of medicine. There is less unanimity regarding disturbances of the gastrointestinal tract but, in the opinion of the writer and of others, these disturbances constitute a significant feature, though of varying importance, in the full-blown syndrome. Whether changes in the systems of the body precede, parallel or follow the disease is, in a therapeutic sense, relatively unimportant. It is at least certain that these changes do not always *follow* the disease alone. These changes, whatever the etiology of the arthritis, are usually more or less open to influence. The measures known to be valuable to this end are mostly simple in principle and some of them are simple in practice. Certain recommendations can be advanced, therefore, which unmistakably strike at the trunk, if not at some of the roots, of arthritic invalidism.

If one recognizes the existence of disturbances in the vascular, nervous, gastrointestinal and locomotor systems one can begin treatment with one prescription which may indeed be almost regarded as a blanket form of therapy, and, in lesser or greater measure, reaches all of them. This prescription is for intelligently ordered rest. The first recommendation, then, to the general practitioner is to put his true arthritics to bed. There is no time to particularize here as to the many things which this accomplishes. Information in this connection must be sought elsewhere.[1] Suffice it to say that the warmth of the covers alone will open many otherwise closed capillary channels. Assumption of the recumbent posture relieves the sympathetic nervous system of that activity which determines the active blood flow, throughout the body, necessary to maintenance of the erect posture. In recumbency, the ptosed organs of the severe arthritic are spared their customary drag and are started on the path of relaxation and unhandicapped function. It is important at this point to caution against that unthinking prescription of rest which allows ankylosis to arise in atrophic cases. These subjects should put their involved joints through their given range of motion at least once daily.

These considerations possibly explain, in some part, the return to gainful employment of sixty per cent. of patients admitted to the Government Hospitals of Sweden devoted to the care of arthritics.

Recommendation 1 to the general practitioner: With the exception of early, sthenic cases, treatment of arthritics as a group can best be inaugurated by intelligently conducted rest, which usually means essential confinement to bed.

With the institution of a better capillary and nervous equilibrium in the sick arthritic, attention can be given to the important and widely present factor of infection. Only at this stage, in the writer's practice, is anything more than analysis undertaken. There is here involved a wide equation between the reaction of tissues towards infection and the reaction of infection towards tissues. The influence of one upon the other is a function of their respective potentials, both of which are variables. Many precipitating infections have been removed at the wrong time with the result that the arthritic as a whole was made worse. Incidentally the writer is convinced that, whereas on the one hand the removal of infection by no means constitutes the whole story, analysis for focal infection is very far from being adequate in more than relatively few centers in this country. Indeed, in the opinion of the writer the analysis for focal infection in arthritis is almost a specialty within a specialty.

1. Arthritis and Rheumatoid Conditions; Their Nature and Treatment—Lea and Febiger, Philadelphia, 2nd edition, 1935.

Gingivitis may be a greater menace than are abscessed teeth and the gall bladder is usually much better analyzed than is the prostate. But whether analysis and treatment be adequate or inadequate, the arthritic will respond better if the initial approach be as above outlined. So prepared is the soil of the arthritic and so delicate his equilibrium that a minimal infection will keep him unbalanced.

Recommendation 2 to the general practitioner: Except in early and mild cases, focal infection should be removed in arthritis, *only* after optimal "physiology" has been obtained in the arthritic sufferer, following intelligent rest in bed.

There are very few persons pretending to any qualifications in the biological field who would deny that the state of nutrition of the subject is an important consideration in disease at large and particularly, perhaps, in relation to infection. Indeed, the whole problem of subacute infection must be regarded today in the light of those ill-defined factors which inhere in the availability and utilization of many kinds of foodstuffs, of which the vitamins are exemplars. In this relatively unmapped congerie are to be considered specific organ tissues, various replacement therapies and such a balance of foodstuffs in general as will augment rather than handicap the operation of these factors. Nutrition in arthritis should not be understood as determined only by obesity or emaciation; it signifies a much more fundamental relationship than this and cannot be successfully denied, in any long-range view, as partly determining the precipitation of, or the recovery from, conditions which infection, for example, induces.

Recommendation 3 to the general practitioner: The chronic arthritic, in all except early, robust cases, should in general be given his full caloric requirement but rarely more when at rest. This should be so arranged as to give him ample protein in the form of meat, milk, etc. (and incidentally there is some evidence that the arthritic sometimes suffers from a low plasma protein); ample vitamins, in which the attempt should be made to administer some of them in somewhat concentrated form; an ample supply of green vegetables and fruits, not only for their vitamin but also for their carbohydrate content; and, finally, a reduction of the concentrated carbohydrate foodstuffs, such as cane sugar and the heavier flour products. It is well recognized that insufficient protein or excess of carbohydrate may render inadequate otherwise adequate quotas of at least four vitamins. Among arthritics the gastrointestinal tract frequently shows ptosis, stasis and hypochlorhydria which call, respectively for attention.

Turning again to the disturbances of physiology briefly referred to earlier in the text, these must be recognized as frequently present. Of these disturbances, that in the capillary beds is among the most prominent. This is to be seen in the cold hands and, perhaps, in the tender and eventually wasted muscles, of the atrophic arthritic especially. No drugs in the pharmacopoeia will correct or even influence this condition. The field of physical therapy, meaning by this principally heat and massage, offers the only specific measure, sound in principle and clinically successful, available to this end. Granting that the metabolic errors in the muscles and other tissues of the arthritic are not fully understood, it is clinically established that heat and properly given massage will do more than will any other single measure to rectify some of the disturbances characterizing this aspect of the disease. These disturbances furthermore cannot be regarded as isolated aberrations. A philosophical perspective requires that they be seen in conjunction with function of the organism as a whole and clinical experience teaches that ministrations in this connection have systemic consequences far beyond the mere surface outcrops of the disease in the form of symptoms. Here is a philosophy which the general practitioner, by definition, may have difficulty in living up to but must finally understand.

There is in the country today no greater dearth of therapeutic desiderata, in view of the knowledge available in this field, than exists in relation to skilled physical therapy. The profession must learn the importance of this agency and it must then learn how to prescribe it. The profession must learn to appreciate and utilize the services of persons trained in this field. The profession must also learn to demand a vastly greater available quota of such persons than now exists.

Recommendation 4 to the general practitioner: He must bring to bear on his arthritic subjects, the enormously reparative forces of physical therapy, meaning essentially heat and massage, in such a restrained and cautious manner as to

undo in a mechanical way, to some extent at least, the circulatory, lymphatic and metabolic errors which widely exist. Physical therapy should not be focused upon the sore joints. It should be directed chiefly at somewhat removed sites. Like other potent instruments physical therapy is capable of as much harm as good, especially in hypertrophic arthritis. No single verbal message, however, will cover this huge field.

The symptom which leads the arthritic to seek advice is usually pain. For generations the polypharmacy with which our profession has been cluttered has led physician and layman alike to look to drugs for relief of this symptom. Only now is there growing appreciation of the fact that, for the most part, the relief of pain should depend upon modification and correction of the physiologic disturbances which give rise to pain. Perhaps in no other disease in medicine is this relationship so clearly to be seen. In almost no other disease in medicine is it possible to bring to bear so many kinds of sound physiologic considerations on the features of the disease. The writer is satisfied that anodyne drugs are greatly abused in this field. The writer is satisfied that adequate analysis of arthritics and an adequate therapeutic approach to the disease, obviates the necessity of three-fourths of the pharmacology exhibited today toward arthritics.

The salicylates are of value to meet emergencies and should be reserved for this purpose. Sedation of the nervous system is often valuable at the outset of therapy. Applications of hot, saturated magnesium sulphate may be very comforting. In the long view, constructive tonic medication, such as very small doses of strychnia, arsenic and liver extract, play a significant role. Their influence is exerted, however, only when the strain of living is removed, when the machinery of the human automobile is idling and when the gentle therapeutic stimulus given in one direction is not negatived by overwhelming and improper demands in another. Hypodermics of strychnia have not won many sweepstakes for tired race horses.

Recommendation 5 to the general practitioner: The use of drugs does not constitute the way out from arthritis. Anodynes should be used chiefly or only at the outset, while those measures are being brought to bear which modify or correct the disturbed physiology productive of pain. Arthritics need a betterment of many phases of their physiology and not subjugation to further intoxication from the "coal tar" products. Opium is contraindicated in the treatment of arthritis and has not for years been administered in the writer's clinic.

A natural corollary to the recognition of infection as a factor in precipitating arthritis has been and is the use of vaccines. Here is a field which no one has yet plumbed to its depths. Because of the importance which the writer has long believed to be attached to the physiologic deviations accompanying the syndrome of arthritis, he has perhaps been regarded as hostile to vaccine therapy. This is not the case, and no open-minded observer can successfully deny theoretical, and indeed some actual, value to this agency. However, much that has been regarded as "specific," in the field of bacteriology, is now known to depend upon more generic phenomena than had been previously thought. There is no question furthermore that vaccines have been most unfortunately abused.

The truth of this situation is, probably, that vaccines are available to a certain proportion of cases only. In the writer's clinic this proportion is not much more than 20 to 25% of the whole. Most of our subjects do exceedingly well without the use of vaccines. In the more refractory residuum of cases, use of this instrument is justified and, indeed, needs further dispassionate investigation. Above all it needs cautious and conservative administration, when it *is* used, to avoid adding to the burdens already existing.

Recommendation 6 to the general practitioner: Despite the attractive implications attaching to the *definite* role of infection in arthritis, the use of vaccines should be reserved for a small and critically selected group. In this field they need further study. An initial approach to the treatment of arthritis through the medium of vaccines frequently suggests unfamiliarity with the problem.

The arthritic acquires, or starts with, structural inadequacies. These may take the form of kyphosis, narrowing or fixation of the thoracic cage and partial angulation of joints. The last named often require the application of principles within the orthopedic field. Kyphosis and narrowing of the thoracic cage can usually be influenced, if not corrected, by the general practitioner if he is adequately aware of the forces

operative to produce, or, in reverse, available to undo, these structural errors. Rest in mild opisthotonos may correct kyphosis and benefit visceroptosis. Breathing exercises will expand the narrow or fixed thoracic cage. Abdominal and breathing exercises will compensate for reduced vital capacity of the lungs and for at least some of the secondary consequences of wheelchair inactivity.

Recommendation 7 to the general practitioner: The attempt must be made to prevent and undo angulation deformity, by maintenance of corrective postures and intelligently directed exercises, beginning in bed, whether this angulation has to do with the chest, the spine, or, as more usually understood, the joints themselves.

The above seven recommendations to the general practitioner constitute nothing more than some basic considerations upon which a more elaborate therapeutic superstructure should be raised. Therapy of arthritis cannot be compressed into a capsule or epigram. Nearly every measure of value almost constitutes a specialty by itself. There is probably no other disease in which such wide demands are made upon the general practitioner. It must be accepted that, alone, he cannot be expected to cope with the problem adequately in more than a few instances. In the experience of my colleagues and myself, about 75% of arthritics should experience great betterment or complete arrest; 20% are more refractory. In this group some factor, probably related to infection, dominates the field so completely as long to resist therapy. In about 5% of cases therapy is of no avail. In the normal man or one sick in other respects, the same infection may have no arthritic consequences and the difference between him and the arthritic is one of a pre-existing equilibrium.

No experienced clinician needs to be told that clinical medicine often runs ahead of precise knowledge of the data upon which it rests. This is somewhat the case in arthritis, notwithstanding many additions to our knowledge, and it is the duty of those who would treat arthritics to see that this broad truth is appreciated. Let us be careful, as has been well said, not to reject the bread of clinical experience while accepting the stone of laboratory experiment. Those who would delimit the treatment of arthritis to the small potential which derives from pathological anatomy only, or from attractive but theoretical bacteriologic implications, must adduce more convincing evidence than now exists, to justify their course. A wide-range view which includes basal considerations such as are above outlined can, at worst, do no harm. At best, it reaches known deviations, and perhaps others not even suspected, which are certainly beyond the influence of drug or antigenic therapy in our present state of knowledge.

The general practitioner affords the backbone of the medical profession and bears its greatest burden. He ill deserves the too-frequently crushing burden of chronic arthritis. Let him therefore sound and learn to sail the deeper waters of this great syndrome in order that his arthritic patients may not be wrecked on the shallows of inexperience.

2031 Locust Street.

CROSS-INFECTION: ITS PREVENTION IN A CHILDREN'S HOSPITAL

MAURICE L. BLATT, M. D.
CHICAGO

It is incumbent upon the hospital receiving children to keep its wards open at all times for the reception of such children as need service. The clientele to which it caters is often a clientele with a low degree of immunity to those infections which are prone to spread rapidly from the general population to such an institution. It is important, therefore, that individuals entering this hospital be recognized as possible carriers, either convalescent from diseases which may still be transmissible or incubating a disease on admission to the hospital. In order to check the spread of infectious diseases, not only in the hospital but in the camp, in the asylum and in all institutions where a large number of non-immune are congregated, extreme care in organization and administration is essential.

In the organization of a children's hospital, departmentalization is a primary requisite. An examining room is necessary where complete history and physical examination and such laboratory work may be made on the incoming patient as is vital. It is necessary that the

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examining room of the children's hospital be separated and distinct from all other departments in that hospital, so that the child applying for admission with pneumonia, bronchitis, upper respiratory tract infection or any other ailment may be segregated, if found to have chickenpox, measles, whooping cough, scabies or any other infectious disease.

An examining room is the first important step in the prevention of cross-infection in the hospital. The second step in the prevention of cross-infection in the hospital is a feature which we have instituted within the last two or three years at the Cook County Hospital in Chicago and at St. Vincent's Orphanage. No child is admitted to the general hospital, no matter what his disease, unless he is given whole blood from a parent. Wassermann and Kahn tests are done on parental bloods before administered, except where an emergency exists. Those individuals who are admitted without such whole blood, because no parent accompanies him on admission, are given whole blood at the first visit of the parent, and this treatment is continued in the event any cross-infection occurs in the ward in which he is placed.

According to this system of hospital departmentalization, the second department into which the child goes is an observation ward. Observation wards in a hospital may be private rooms, cubicles, small wards or a cluster of larger units. The fewer the number of individuals occupying a given room during the period of observation, until laboratory reports and further physical examinations may be completed, the fewer the number of cases of cross-infection that will occur.

Careful observation by attending men and residents, trained to detect the early signs not only of the contagious disease but the signs of the disease just fading, are essential.

As these children have received whole blood, we anticipate a mild degree of protection; sometimes complete and often not complete but modifying the disease so that it may be controlled in the hospital. In the majority of instances the protection seems to us to be complete.

As these children enter our institution, a contagious disease card is made out. This card shows the date of any contagious disease which this child has had previously and, in addition, the date of immunization against the infectious diseases which we can immunize against, so that in picking up a patient's card, one can quickly recognize whether the child has had measles, chickenpox, mumps or whooping cough; and in the event that a case of one of these infectious diseases occurs in the ward, one recognizes immediately which child needs protection. Furthermore, in some instances, in the presence of an epidemic of a disease in the community, where a number of such cases may be admitted, it is possible to so place one's children in larger wards as to minimize the opportunity for a hospital epidemic. For instance, if three children are placed in a single ward and two have already had measles, the danger of an epidemic in such a room has been eliminated before it occurs.

The problem of carriers is always taken under consideration in our institutions. In the event of the occurrence of an epidemic or in an epidemic disease in one of our wards, the entire personnel in contact with this ward is examined. It is definitely understood that diseases such as chickenpox, whooping cough, possibly measles, certainly smallpox and certainly typhoid fever may be carried by individuals who have not the disease themselves. It is definitely known that individuals, nurses and camp personnel, caring for individuals with these diseases may themselves become carriers without contracting the disease and pass it on to others.

Epidemics of epidemic meningococcus, meningococcic meningitis, whooping cough and chickenpox have been seen by all of you in institutions where immediate contact between the original case and the secondary case never occurred. We recognize that the occurrence of a single case of infection in a room means the complete isolation of every member in that room. The case with infection should not be moved to another room in the same building but should only be moved when it can be removed to where it belongs, to a contagious hospital.

Having had a case of acute infectious disease in a ward in the institution, the next important step in the prevention of an epidemic of the same disease in the institution is the passive immunization of all individuals who were in contact wth the original case.

Most interestingly, the surgical wards and

the orthopedic wards are commonly affected by scarlet fever. Its occurrence in the surgical ward can be easily explained. The child enters the hospital with an acute cervical adenitis. A throat culture is made which is negative; no history of scarlet fever is obtained, and the case is operated upon. A large amount of pus drains, and from time to time this child enters the dressing room and is dressed by an attendant who afterwards dresses other cases. This type of treatment in the surgical ward is undesirable and, in the Cook County Hospital, no longer occurs. A case of cervical adenitis, questionable as to its etiology, is not operated upon in the surgical department except in the event it can be given entirely isolated treatment and dressing after operation.

Visitors to the children's ward are common carriers of infection. In our hospital intimate contact between visitors and the children is not allowed. Our premature wards are closed off; our infant wards are closed off. Mothers and fathers may see their children in the children's hospital as they see their children in the city contagious hospital under Dr. Hoyne's direction, that is through the windows of glass enclosed rooms. We do not encourage visiting; we discourage it. We do not welcome visitors to children whose lives we believe to be in danger.

Masks are valuable in a Children's Hospital. A number of infections of the respiratory tract decrease in those departments of the hospital in which masking of nurses and attendants is strictly enforced.

Our experience with the impervious deflecting mask at St. Vincent's Infant and Maternity Hospital has warranted its use for the past three years. Nurses in the premature ward at the County Hospital are constantly masked—no one is allowed in the ward unmasked.

The discomfort and inconvenience of the common gauze mask is in a large measure overcome by the form fitting cellophane mask.

As to specific immunization, one cannot say too much. As the general trend of active immunization of the populace outside of the hospital increases, to just that degree will the hospital cross-infection decrease. As diphtheria immunization, scarlet fever immunization and whooping cough immunization increase in the general populace, through the efforts of the pediatrician and the public health official, to just that degree will the percentage of cross-infections in these diseases fall, and it is on the future of preventive inoculation that we pin our greatest hopes.

I have two slides that I would like to show you, showing our efforts at hospital organization and administration.

185 N. Wabash Ave.

CHILDREN'S HOSPITAL ORGANIZATION AND ADMINISTRATION

I. Hospital Organization—(Departmentalization)

A. Contagious Pavilion
B. Smallpox Hospital
C. Children's Hospital

1. Surgery
   (a) Receiving and observation ward
   (b) Operative Ward
   (c) Convalescent Ward

2. Orthopedic
   (a) Receiving and observation ward
   (b) Operative Ward
   (c) Convalescent Ward

3. Medical Receiving Room
   (a) Medical Observation ward or
      (a) 1. Dysentery Ward
         2. Typhoid Ward
         3. Tuberculosis Ward
         4. Cubicles for clean cases
         5. Surgical Ward
         6. Orthopedic Ward
         7. Contagious Hospital

   (1) Individual Rooms
      (a) Suspect Contagion
      (b) Contact Contagion
      (c) Convalescent Contagion
      (d) Carrier

   (2) Cubicles
      (a) Suspect Tuberculosis
      (b) Suspect Dysentery
      (c) Suspect Typhoid
      (d) Streptococcus throats
      (e) Upper respiratory infections
      (f) Pneumonia
      (g) Pertussis Bronchopneumonia
      (h) Transfer from Contagious Hospital

   (3) Shock Room
      (a) Any patient needing shock treatment

   (4) Open Rooms
      (a) Non-Infectious Medical Cases

II. Hospital Administration

Cases are routed on basis of classification by examining room physicians.

A. Contagious—to Contagious hospital

B. Contagious Contact—rigid isolation until:
(1) Immunized
(2) Period of incubation passed
(3) Disease contracted
(4) Sent to Contagious Hospital

C. Contagious Complications—isolate until cleared clinically or culturally.
1. Scarlet glands, otitis media or desquamation
2. Pertussis bronchopneumonia
3. Diptheria carrier
4. Hemorrhagic nephritis
5. Measles bronchopneumonia

D. Non-Contagious
1. Observation Ward 72 hours
(a) History
(b) Physical Examination
(c) Cultures
(d) Smears
(e) Clinical Course
1. Negative—to treatment ward
2. Positive—to proper wards as
(a) Tuberculous Ward
(b) Gonorrhea Ward
(c) Syphilis Ward
(d) Dysentery Ward
(e) Typhoid Ward
(f) Pneumonia Ward
(g) Contagious Hospital

E. Prematures—to Premature Ward

F. Infants—to
1. Shock Room
2. Infants Ward
(a) Feeding Room
(b) Respiratory Infection Room
(c) Enteral Infection Room
(d) Clean Room
(e) Isolation Room

G. Orthopedics—to Orthopedic Ward

H. Surgical—to Surgical Ward

DISCUSSION

Dr. Archibald L. Hoyne, Chicago: Dr. Blatt has accomplished a splendid piece of work in the children's department of the Cook County Hospital. If he had presented a resumé of many of the past experiences in the hospital I think you would all be in a much better position to appreciate just what he has done.

There is no doubt that, when children are admitted to a hospital of this kind, one of the primary things is an observation ward. With isolation facilities, new patients coming in during the incubative period of a disease can be prevented from starting an epidemic.

One of the things that helps very much, of course, is the matter Dr. Blatt spoke of, the immunization of all children as they are admitted. On the other hand, in respect to extremely young children, you might wonder how far it would be necessary to go. As a rule, children under six months of age do not have diphtheria, scarlet fever or measles; but they may contract whooping cough or chickenpox or smallpox, if they are not protected. Erysipelas, diarrheal diseases or gonorrheal vaginitis may occur at any age.

The giving of whole blood to every patient admitted is a procedure that the average institution would be unable to carry out. Moreover, it seems to me that such a plan is of doubtful value in the extremely young infants.

If I am not mistaken, Dr. Blatt made some reference to vaccination as being safe after six months of age. I would like to ask him what the objection is if done at a younger age. I have vaccinated infants as early as fifteen minutes after birth. That is sooner than you would ordinarily do it, but at three to four months I think the child is not likely to have any serious trouble. The local reactions are very much less in the early months than they are in the later years. I have never seen any serious consequences from this vaccination unless scratched by unclean hands.

It is rather unfortunate that we still need smallpox hospitals. Smallpox is one disease above all others against which absolute protection can be had. It seems all out of the proper order of things to think that in this day we still have to talk about having a smallpox hospital in a city like Chicago. Yet even if we have only one or two patients a year, the small cost of maintaining a separate institution of that kind might be the means of preventing a great epidemic of smallpox and an immense loss of money through loss of business in the community. Such factors are important as well as the disability of individuals and possible death.

Dr. A. J. Fletcher, Danville: I was especially interested in Dr. Blatt's routine in giving whole blood injections, from the parents to the children upon entering the hospital. I would like Dr. Blatt to explain how much blood is given, where is the best place to give it, and the object in giving it.

Dr. Blatt, in closing: Regarding smallpox vaccination, I have never advocated the early vaccination of infants. My reason for so doing has been because I have felt that during the very early months of childhood, infection or irritation of any type, is prone to produce gastrointestinal, if no other type of disturbance. The unstable digestive apparatus of the tiny infant makes any unnecessary irritation undesirable, and I have, in my private work as well as in my institutional work, set the date of six months as the date when I believe a sufficient stability had been achieved so that it might be accompanied by no danger. I furthermore have another rule in regard to smallpox vaccination, and that is, I don't vaccinate against smallpox in the summer, first, because I feel that the vaccine is likely not to be potent because of its transportable weakness, and secondly, because the frequency of bathing necessary in the summer months is more prone to produce local in-

fection than a partially covered arm with less bathing in the winter. We use alcohol to cleanse our smallpox vaccinations, consistently, and by so doing produce an aesthetic scar that appeals to the parents in our private practice. Our vaccination is done in accordance with the multiple pressure method of the Public Health Department of the United States. We have scars no larger than the eraser on a lead pencil, and in our experience of vaccinating in the winter have a vaccinating efficiency of something over 95%. My experience in the summer has been that the scars may be larger because of infection, or the scab being pulled off before healing is complete, and consequently I advocate six months, and I let it run even a little longer if it is in the middle of the summer.

Regarding the whole blood, we take 20 c.c. of whole blood from the mother's elbow vein, in a 20 c.c. syringe or 30 c.c., and inject that directly into the child's buttocks. In the older child we not infrequently use 30 c.c. of whole blood. It is our belief, based upon our experience with measles, chickenpox and whooping-cough, that immune bodies exist in the blood of most adults; immune bodies not only to those diseases whose organisms are known, but to other diseases such as the common cold, and perhaps some types of streptococcic infection. We believe that by so injecting our incoming patient we can produce a degree of passive immunity equal to the injection of one-half the same amount of normal human serum into the same individual. Furthermore, we believe that in rheumatic infections, in the endocarditites, in choreas, in pneumonias or influenza, the giving of whole blood in this way is in no way harmful, does not produce shock, and seems to us to be beneficial.

FACTS NOT TO BE FORGOTTEN

1. Children do not outgrow "cross eyes." A large proportion may be cured, and binocular vision obtained without operation, if treatment be started before the fifth year. "A child who is old enough to squint is old enough to wear glasses," according to an old Philadelphia maxim.

2. Failing vision is so frequently a danger signal, that it demands professional direction. Two pairs of glasses will not correct chronic glaucoma, chronic iritis, retino-choroiditis, retinal hemorrhage or detachment, hypertension, optic atrophy or cataract.

3. Violent temporal neuralgia, with vomiting, may be due to acute glaucoma or iritis, not a digestive upset. Take a look at the eyes!

4. Morning headaches are not from eye strain unless the eyes have been worked late the night before.

5. Normal eyes depend upon muscles for their ability to function. When the body is tired, the eyes are tired. You can't work all day and read all night.

6. Phenol and glycerin ear drops never cured an otitis media or a mastoid, but usually start an external otitis, complicating the picture.

7. Soap and water in the ears, for cleanliness' sake, has increased the otologists' clientele, on account of the scaly itching meati it causes. The patient, seeking relief from this annoyance, scratches the ear with a hair pin, match or tooth pick, readily infects the skin through its damaged epithelium, resulting in scabs and occluding exudate, or furunculosis.

8. Most acute suppurations of the ear will get well, if they have early drainage, by incision of the drum, or spontaneous rupture. If the drainage keeps up for two weeks, an otologist should be consulted.

9. An X-ray is only a factor toward diagnosis of mastoid and nasal sinus diseases.—Charles Lukens, M. D., F. A. C. S., Toledo, Ohio.

TEN COMMANDMENTS FOR SOCIETY

I. Thou shalt put good laws upon thy Statute Books, and none other.

II. Thou shalt have good policemen upon the beat and honest detectives upon the trail.

III. Thou shalt appoint good Judges to the Bench —those who know well the institutions to which they consign the lawbreakers.

IV. Thou shalt give fair, unprejudiced, unpolitical trials, where bribery and corruption may not be found.

V. Thou shalt not pass determinate sentences, for what man knoweth the end from the beginning.

VI. Thou shalt not kill according to Law.

VII. Thou shalt not steal the chances of the victims of circumstances, but shalt make a complete diagnosis (physical, mental, spiritual and social) of each one who may be sentenced.

VIII. Thou shalt labor more diligently towards the reformation of him or her who shall be incarcerated than towards inquisitional punishment.

IX. Thou shalt never return into Society those who are incurably anti-social and incapable of reformation, so they may not continue to kill and to despoil and to destroy.

X. Thou shalt do always that which is just and right and good towards those who must be rehabilitated upon release from behind the stone walls and the steel bars.

Oswald C. T. Withrow, M. D.

Toronto, Can.

SOCIETE ROYALE DE MEDECINE DE GAND

The Societe Royale de Medecine de Gand has taken over, on its own account, the publication of its Annals. As far as possible, each number will treat determinated medical problem. An appeal will be made upon the most qualified Belgian and foreign personalities.

The first number contains 120 pages and is especially devoted to scarlet fever.

The second number will be devoted to female sexual hormones and shall contain articles by Professor Courier (Algers), Dr. Kaufmann (Berlin), and Dr. Laemmer (Paris). It will equally contain an article by Dr. Atkinson (London) relating to acromegaly and Prof. Charvat (Prague), treating surrenals.

The third number which will be devoted to the treatment of chronical rheumatism, shall contain articles by Professor Gunsburg (Brussels), Pemberton (New York), Papp (Budapest), Koncholovsky (Moscow), and Doctors Barnes Burt (Bath), Krebs (Wiesbaden),

M. P. Weill (Paris), Sédilot (Paris), Roland Leven (Paris), etc.

In the next issues studies will be edited concerning vitamins, brain tumors, cardiacal diseases, etc.

The Annals would like contributions from American physicians on the following subjects:

1. Cardiology (especially pectoral angina).
2. Vitamins.
3. Brain tumors.

The subscription for at least 10 issues amounts to 50 Belgian francs per annum. Subscriptions are to be effected in favor of the Société Royale de Médecine, Ghent; Belgian Post-cheque n° 619.86.

Any information to be obtained from the Society's Secretary, Dr. P. De Bersaques, Rue de la Croix, 8, Ghent.

Anyone desiring to receive the issue devoted to scarlet fever, can obtain this number from the Secretary, *Dr. P. De Bersaques, Rue de la Croix, 8, Ghent. Price:* 10 francs.

HEALTH NEWS ITEM

What a world! By the time you are important enough to take two hours for lunch, the doctor limits you to a glass of milk.

Society Proceedings

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Wednesday, November 4, 1936

PROGRAM

Symposium on Oxygen Therapy

1. Physiology of Oxygen Want with Discussion of Symptoms. Ford K. Hick, Chicago. Dept. of Medicine, University of Illinois and Illinois Research Hospital.
2. Accepted Methods of Administration to Assure Therapeutic Dosage. J. I. Banash, Chicago, Consulting Engineer.
3. Clinical Response to Oxygen Therapy. M. Herbert Barker, Chicago. Dept. of Medicine, Northwestern University and Passavant Hospital.
4. Postoperative Use of Oxygen. Ralph M. Waters, Madison. Professor of Anaesthesia, Dept. of Medicine, University of Wisconsin.
5. Discussions opened by—Robert W. Keeton, Dept. of Medicine, University of Illinois.

JO DAVIESS COUNTY

The Jo Daviess County Medical Society met at the Galena Golf Club at Galena on September 24. During the afternoon several of the members held a friendly golf tournament. The scientific meeting was addressed in the evening by Dr. W. J. Bleckwenn of University of Wisconsin Medical School, on Early Diagnosis and Treatment of Head Injuries. Dr. M. J. Musser of Wisconsin General Hospital gave a paper on the Early Diagnosis and Treatment of Bromism.

Physicians were present from Dubuque, Iowa, Southern Wisconsin and adjoining counties.

RAY E. LOGAN, M.D., *Secretary.*

Marriages

FRANCIS KEITH BRADFORD, Chicago, to Miss Margaret Anne Bowles, of Richmond, Va., recently.

JOHN BERNARD CHRISTIE, Champaign, Ill., to *Miss Marie Anna Sturdyvin, in Peoria, in July.*

SHERMAN S. GARRETT, Champaign, Ill., to *Miss Virginia Hailey of Kansas City, Mo., in* Carlinville, in June.

LOREN LENNOTH LOVE, Valier, Ill., to Miss Thedis Wente of Johnston City, recently.

JAMES BLISH MCBEAN to Miss Grace Agnes Callan, both of Chicago, August 19.

SOLOMON B. MEYERSON, St. Charles, Ill., to Miss Ida Edith Fisher of Long Branch, N. J., in Chicago, August 2.

KENNETH EUGENE POWELL to Miss Doris Elizabeth Appell, both of Galva, Ill., October 3.

HENRY C. ROSENSTIEL, Freeport, Ill., to Miss Mildred Mershon of Mount Carroll, August 15.

PHILIP FREDERIC SCHNEIDER to Miss Kathryn Ann Lantz, both of Evanston, Ill., June 17.

ROGER F. SONDAG, East St. Louis, Ill., to Miss Mary Jo Gualdoni of Murphysboro, June 20.

FREDERICK STENN to Miss Harriett Stricker, both of Chicago, August 16.

LAWRENCE N. WALTHIER, Atkinson, Ill., to Miss Madeline Goering of Walcott, Iowa, in Davenport, June 6.

MARTIN F. ZIEMER, Chicago, to Miss Louise Anne Simon of Elkhart, Ind., September 20.

Personals

The Chicago Council of Medical Women was addressed October 2 by Dr. Esther T. Frankel on "Indications for Physiotherapy."

Dr. William H. Holmes, Chicago, discussed undulant fever before the Sangamon County Medical Society, October 1.

Dr. Samuel W. Becker discussed "Relation of Allergy to Dermatology" before the Chicago Society of Allergy, October 19.

Dr. Margarete M. H. Kunde, Chicago, discussed endocrine therapy before the Iroquois County Medical Society at Watseka, September 24.

Dr. Earl O. Latimer, Chicago, addressed the Will-Grundy County Medical Society, September 30, on treatment of appendicitis.

At a meeting of the Du Page County Medical Society, September 16, Dr. Clarence J. McMullen, Chicago, spoke on diabetes mellitus.

At a meeting of the DuPage County Medical Society, September 23, Dr. Max Thorek, Chicago, discussed "Photography as a Doctor's Hobby."

At a meeting of the Dewitt County Medical Society in Clinton, September 23, Dr. Robert S. Berghoff, Chicago, spoke on heart disease.

The presidential address was delivered before the Chicago Pathological Society, October 12, by Dr. Carl W. Apfelbach on "Modern Concepts of Cirrhosis of the Liver."

Dr. Louis K. Guggenheim, St. Louis, addressed the Chicago Laryngological and Otological Society October 12 on "The Ontogenetic Approach to the Pathology of Deafness."

Dr. Bryan J. Carder, deputy health commissioner of Berwyn township for the past three years, has been appointed commissioner to fill the unexpired term of the late Dr. Edward J. Farrell.

At a meeting of the Chicago Pediatric Society, October 20, Robert H. Gault, Ph.D., Evanston, read a paper entitled "Enlarging the Usefulness of the Vibrotactile Senses."

Dr. Max L. Folk, among others, presented a preliminary report on "Paracentesis and Atropine in the Treatment of Optic and Retinal Atrophies" before the Chicago Ophthalmological Society, October 19.

Dr. Mary Stone, head of the Bethel mission center, Shanghai, China, was guest of honor at a dinner given by women physicians of Chicago at the Women and Children's Hospital.

The Chicago Roentgen Society was addressed, among others, by Dr. Stuart W. Harrington, Rochester, Minn., on "The Diagnosis and Treatment of Diaphragmatic Hernia."

The Chicago Neurological Society was addressed October 15, among others, by Drs. Isidore Finkelman and Daniel Haffron on "Observations on the Circulating Blood Volume in Schizophrenia, Manic Depressive Psychosis and Epilepsy."

Dr. Frank E. Walton, St. Louis, addressed the Vermilion County Medical Society in Danville, September 2, on "Diagnosis and Management of Biliary Tract Diseases."

Samuel J. Beck, Ph.D., recently of the department of psychiatry, Harvard Medical School and Boston Psychopathic Hospital, Boston, has been appointed in charge of the psychology laboratory in the department of psychiatry at Michael Reese Hospital.

Dr. Dean DeWitt Lewis, professor of surgery Johns Hopkins University School of Medicine, Baltimore, delivered the eighth annual Arthur Dean Bevan Lecture of the Chicago Surgical Society, October 2. His subject was "Endocrinology and Surgery."

The Hancock County Medical Society was addressed, September 14, by Drs. Charles P. Blair, Monmouth, on "Fractures of the Spine" and Harold M. Camp, Monmouth, "The County Medical Society and the Community."

Speakers before the La Salle County Medical Society in Ottawa, September 23, were Drs. Jacob J. Singer, St. Louis, on "Diagnostic Methods in Obscure Chest Conditions," and Millard F. Arbuckle, St. Louis, "Pulmonary Conditions Revealed by the Bronchoscope."

The McDonough County Medical Society was addressed at Macomb, September 24, by Drs. William J. Pickett, Chicago, on thyroid surgery; Joseph E. F. Laibe, Chicago, hematuria, and Robert S. Berghoff, Chicago, diseases of the heart. Dr. Berghoff also conducted a heart clinic.

Dr. George E. Bennett, Baltimore, addressed the Chicago Orthopaedic Society, October 9 on "Acute, Recurrent and Old Dislocations of the Shoulder," and Drs. Paul H. Harmon and Carroll O. Adams, "Pyogenic Arthritis of the Hip, with Special Reference to Pathological Dislocation and Treatment."

Sir Joseph Barcroft, professor of physiology, University of Cambridge, England, gave two lectures at the University of Illinois College of Medicine, September 29-30; his subjects were "The Genesis of Respiratory Movements" and "The Effect of the Composition of the Blood on Mental Properties."

Dr. Frederick A. Causey, assistant managing officer of the Chicago State Hospital, has been appointed acting managing officer of the Lincoln State School and Colony, Lincoln; Dr. Phillip S. Waters, Alton, managing officer of the Lincoln school, has been granted a leave of absence on account of illness.

At a meeting of the Englewood branch of the Chicago Medical Society, October 6, Dr. Rosco G. Leland, director, Bureau of Medical Economics, American Medical Association, will speak on medical economics and Dr. Olin West, Secretary of the Association, will open the discussion. Dr. Emil Novak, Baltimore, addressed the Aux Plaines branch, September 25, on "Cause and Treatment of Functional Uterine Bleeding."

Dr. M. Herbert Barker, Chicago, addressed the Jackson County Medical Society, Kansas City, Mo., October 13, on "Clinical Response to Oxygen Therapy."

Dr. Archibald Hoyne addressed the Lee County Medical Society on October 5. Subject: "Infantile Paralysis."

Dr. Daniel H. Levinthal addressed the American Association for the Study of Neoplastic Diseases at their meeting in Washington, D. C., on September 17, 1936. His subject was "Eradication of Benign Bone Tumors and Immediate Reconstructive Surgery."

Dr. Elmer V. McCarthy addressed the 13th annual convention of the American College of Proctology at the Stevens Hotel, September 24, on "The Injection Treatment of Hernia," illustrating the subject with moving pictures covering the anatomical, clinical, surgical and injection aspects.

Dr. Gilbert Fitz-Patrick, Chairman Illinois Cancer Committee spoke under the auspices of the Shannon Woman's Club at the Evangelical Church, Shannon, Illinois, Wednesday, October 7. Subject: "What Every Woman Should Know About Cancer," illustrated with slides.

Dr. Philip H. Kreuscher presented a paper on "Surgical Treatment of Arthritis," at a meeting of the Eighth Councilor District of the Illinois State Medical Society in Casey, October 8. John R. Neal of Springfield discussed "The Regulation of the Physician by Law."

Dr. Abraham R. Hollender gave a paper on "Vaso-Motor Rhinitis—Evaluation of Therapeutic Procedures with Special Reference to Ionization," before the Will-Grundy County Medical Society at Joliet, October 7.

Dr. Clayton J. Lundy addressed the Kankakee County Medical Society, Thursday October 8, on Angina Pectoris and also demonstrated electrocardiograph studies of the heart with movies.

News Notes

The Illinois Radiological Society and the Chicago Roentgen Ray Society held a joint meeting at Starved Rock State Park, Illinois on Sunday, October 11.

In addition to the discussion of several interesting cases the following program was presented:

The Diagnosis of Chronic Cholecystitis, Dr. W. H. Cole, Prof. of Surgery, University of Illinois.

The Illinois Occupational Disease Law, Oliver E. Mount, Chairman of Committee on Occupational Disease, Illinois Manufacturer's Ass'n.

—Dr. Frank W. Lynch, professor and head of the department of obstetrics and gynecology, University of California School of Medicine, San Francisco, delivered the seventh annual Charles Sumner Bacon Lectures at the University of Illinois College of Medicine, October 16 and October 23. Dr. Lynch's subjects will be "Carcinoma of the Uterus" and "Uterine Fibroids."

—A record of 206 cases of infantile paralysis in Illinois in September was the highest monthly total of cases of this disease since 1917, according to the Chicago *Tribune,* September 28. Because of the general increase in prevalence throughout the state, the Illinois department of health has requested volunteer contributions of blood from persons who have recovered from the disease in the last fifteen years.

—Securities valued at more than $1,000,000 were given to Wesley Memorial Hospital, October 14, by George Herbert Jones, formerly president of the Inland Steel Company. The money will be used to erect the first unit of a proposed new $5,000,000 group of hospital buildings at Chicago Avenue, Fairbanks Court and Superior Street, near Northwestern University's McKinlock Campus.

Dr. Henry A. Christian, Hersey professor of the theory and practice of physic, Harvard University Medical School, Boston, delivered the third Frank Billings Lecture of the Thomas Lewis Gilmer Foundation of the Institute of Medicine of Chicago at a joint meeting with the Chicago Society of Internal Medicine, October 26, at the Palmer House. His subject was "Edema, Diuretics, Diuresis."

—Wesley Memorial Hospital announces the receipt of an annual allotment from the Davella Mills Foundation, Montclair, N. J., for the treatment of cancer patients and research on cancer. The sum of $7,500 was allotted for 1936 and in June of each year an appropriation will be made. The Davella Mills Foundation was created in 1934 by Mr. David B. Mills and his wife Ella. The income is used to further the activities of several philanthropies.

—Dr. Richard Jaffe will hold the Children's Pathology conferences of Cook County Hospital in the Morgue Amphitheatre at 1:00 P. M., on the following dates:

October 16, 1936.
November 20, 1936.
December 18, 1936.
January 15, 1937.
February 19, 1937.
March 19, 1937.
April 16, 1937.
May 21, 1937.

At these conferences, the most interesting postmortem material from the Cook County Children's Hospital is presented. Clinical histories and laboratory findings are given by the resident familiar with the case. The Attending Staff of Cook County Hospital discuss the findings.

All members of the Illinois State Medical Society are invited.

MAURICE L. BLATT, M.D.,
Head of the Department,
Diseases of Children,
Cook County Hospital.

—Frederick Stearns & Company announce the appointment of Lloyd L. Ely, M. D., as medical director. Dr. Ely has been a member of the Chicago and Indianapolis Medical Societies, the Illinois and Indiana State Medical Associations, the American Medical Association and the Society for the Study of Internal Secretions.

Deaths

EDWARD MILTON BROWN, Chicago; a Fellow A. M. A.; Northwestern University Medical School, Chicago, 1893; clinical professor of surgery, Loyola University School of Medicine; fellow of the American College of Surgeons; senior surgeon to the Mercy Hospital; aged 67; died, September 28, of coronary embolism and chronic myocarditis.

WILLIAM HENRY BURMEISTER, Chicago; University of Michigan Department of Medicine, Ann Arbor, 1907; a Fellow A. M. A.; served during the World War; formerly assistant professor of pathology at the University of Illinois College of Medicine; on the staff of St. Joseph's Hospital; aged 54; died, August 11, at his summer home in McHenry.

FRANCIS JAMES BUSS, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; a Fellow A. M. A.; member of the staffs of the Robert Burns, Belmont and Ravenswood Hospitals; aged 60; died, July 11, of embolism.

THOMAS D. CANTRELL, Bloomington, Ill.; Rush Medical College, Chicago, 1888; member of the Illinois State Medical Society; served during the World War; aged 72; died, August 18, of arteriosclerosis and cerebral hemorrhage.

HAROLD EARL DODGE, Franklin Park, Ill.; Rush Medical College, Chicago, 1890; for many years health officer of Franklin Park; aged 73; died, July 13, of carcinoma of the prostate.

ALFRED OLIN ELLISON, Chicago; Hering Medical College Chicago, 1911; member of the Illinois State Medical Society; served during the World War; on the staff of the Norwegian American Hospital; aged 49; died, July 29, of an overdose of morphine, self administered.

CHARLES A. EVANS, Bluffs, Ill.; Medical College of Indiana, Indianapolis, 1896; past president of the Scott County Medical Society; past president of the village board, and member of the local board of education; aged 67; died, July 5, of myocarditis and diabetes mellitus.

FRANK JOHN FARA, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; a Fellow A. M. A.; member of the staff of the Hospital of St. Anthony de Padua; aged 55; died suddenly, July 22, in Berwyn, Ill., of coronary thrombosis.

LOUIS J. GIERS, Jerseyville, Ill.; St. Louis College of Physicians and Surgeons, 1891; member of the Illinois State Medical Society; aged 69; died, July 11, of arteriosclerosis.

PHILIP ABERNETHY GRAVES, Oak Park, Ill.; Dearborn Medical College, Chicago, 1904; a Fellow A. M. A.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; for many years a member of the staff of the Chicago

Eye, Ear, Nose and Throat Hospital; aged 63; died, July 17.

JOEL HENRY GREENE, Urbana, Ill.; University of Buffalo School of Medicine, 1875; aged 84; died, July 29, in the Burnham City Hospital, Champaign, of angina pectoris.

WILLIAM LISENBY GRAY Champaign, Ill.; Keokuk (Iowa) Medical College, 1891; a Fellow, A. M. A.; fellow of the American College of Surgeons; past president of the Champaign County Medical Society; for many years member and president of the board of education; formerly city health officer; aged 70; on the staff of the Burnham City Hospital, where he died, August 29, of a skull fracture received in a fall.

HENRY FORD HASKINS, Peoria, Ill.; St. Louis University School of Medicine, 1916; member of the Associated Anesthetists of the United States and Canada; served during the World War; aged 43; died, July 25, of pneumonia.

JOSEPH C. HUDSPETH, Sandoval, Ill.; American Medical College, St. Louis, 1882; aged 81; died, July 13, of heat exhaustion.

CARL ALBIN LOFGREN, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 67; died, July 12, of diabetes mellitus.

GEORGE NELSON MANNING, Wheaton, Ill.; College of Physicians and Surgeons of Chicago, 1894; aged 66; died, July 13, in St. Charles Hospital, Aurora, of cerebral hemorrhage.

JOSEPH D. MCKELVEY, East Moline, Ill.; Rush Medical College, Chicago, 1895; member of the Illinois State Medical Society; aged 65; on the staff of the East Moline State Hospital, where he died, July 29, of heart disease.

HENRY PARKER NEWMAN, professor of gynecology, emeritus at the University of Illinois College of Medicine, Chicago; died, September 21, of coronary occlusion, at his home in San Diego, Calif., aged 82. Dr. Newman was born in Washington, N. H., Dec. 2, 1853. He obtained his preliminary education at the New London (N. H.) Literary and Scientific Institution and later attended Dartmouth College. In 1878 he received the medical degree from the Detroit Medical College, and later, for two years, studied at universities in Bonn, Leipzig and Strassburg. In 1880 Dr. Newman located in Chicago. He became professor of obstetrics and clinical gynecology at the College of Physicians and Surgeons of Chicago, of which institution he was also treasurer and member of the board of directors. At one time he was professor and emeritus professor of gynecology at the Chicago Policlinic and one of the founders, president and professor of gynecology, Post-Graduate Medical School and Hospital of Chicago and was president of the laboratory of experimental research while it was part of that institution. From 1894 to 1904 he was treasurer, chairman of the Section on Obstetrics and Diseases of Women from 1900 to 1901, and a member of the House of Delegates from 1916 to 1918 of the American Medical Association. He was an Affiliate Fellow of the American Medical Association, at one time vice-president of the Chicago Gynecological Society, and one of the founders and a fellow of the American College of Surgeons. He was a member of the Gorgas Memorial Institute of Preventive Medicine, Washington, D. C., a founder of the Congrès Périodique International de Gynaecologie et d'Obstétrique, and in 1890 a delegate to the Tenth International Medical Congress in Berlin. He was consulting surgeon and gynecologist to the San Diego County and Mercy hospitals, San Diego, and the Scripps Memorial Hospital and Clinic, La Jolla. He established, and was president and surgeon-in-chief of the Marion Sims Sanitarium; was formerly on the staffs of the Chicago Post Graduate, St. Anthony's, Chicago Maternity, West Side and St. Elizabeth's hospitals, Chicago. In 1894 he was awarded the honorary A.M. degree by Dartmouth College.

DOUGLAS LATEN POTTER, Chicago; Rush Medical College, Chicago, 1935; aged 27; on the staff of the U. S. Marine Hospital, where he died, August 25, of intestinal obstruction due to adhesions and acute peritonitis.

JOHN EARL PULVER, Chicago; John A. Creighton Medical College, Omaha, 1908; member of the Illinois State Medical Society; chief surgeon for the Chicago and North Western Railroad; aged 52; died, August 28, in Omaha, of arteriosclerotic heart disease.

RUSSELL DEAN ROBINSON, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1914; Fellow, A. M. A.; served during the World War; on the staffs of the Roseland Community Hospital and the Little Company of Mary Hospital; physician to the Morgan Park Military Academy; aged 46; died, August 5, of injuries received when he fell from the roof of his home while repairing a radio aerial.

WILLIAM PHILLIP SCHIRDING, Palatine, Ill.; Rush Medical College, Chicago, 1894; aged 64; died suddenly, July 16.

OCTAVIUS MANLIUS SPENCER, Chicago; Vanderbilt University School of Medicine, Nashville, Tenn., 1915; formerly a surgeon in the U. S. Public Health Service; aged 43; died, July 13, of heart disease.

LEROY THOMAS TELFORD, Alma, Ill.; University of Illinois College of Medicine, Chicago, 1936; aged 26; died, July 12, in the Evangelical Deaconess Hospital, St. Louis, of an injury received by diving into shallow water.

JOSEPH S. THRAILKILL, Wood River, Ill.; American Medical College, St. Louis, 1883; aged 75; died, June 30, of arteriosclerosis.

CHARLES ARTHUR ZEIGLER, Amboy, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the Illinois State Medical Society; president of the Lee County Tuberculosis Society; for many years a member of the board of education; aged 68; died, July 6, of occlusion of the coronary artery.

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